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ARMSTRONG LABORATORY

STORM WATER POLLUTION PREVENTION PLAN

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OCCUPATIONAL AND ENVIRONMENTAL HEALTH DIRECTORATE
2402 E. Drive
Brooks Air Force Base, TX 78235-5114

September 1994

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A Storm Water Pollution Prevention Plan (SWPPP) was developed for Robins AFB, GA (RAFB) to improve water quality by reducing the potential for pollutants contained in its storm water discharges. Implementation of the procedures discussed in the SWPPP for managing and monitoring storm water will minimize the potential for release of contaminants to the environment and protect human health.

The SWPPP is designed to comply with the following Federal and State legislation and regulations:

- Federal regulation 40 CFR 122.26 establishes procedures for the discharge of storm waters from industrial and municipal facilities to waters of the United States. Regulation 40 CFR 122.26 requires development of a SWPPP as a requirement for the storm water discharge permitting process.
- Georgia Water Quality Control Act.
- State of Georgia General Permit for Authorization to Discharge Under the National Pollutant Discharge Elimination System Storm Water Discharges Associated with Industrial Activity.

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STORM WATER POLLUTION PREVENTION PLAN CERTIFICATION

PLAN CERTIFICATION

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STORM WATER POLLUTION PREVENTION PLAN

LIST OF ACRONYMS AND ABBREVIATIONS

µg	microgram
AMC	Air Mobility Command
ARW	Air Refueling Wing
AST	Above-ground Storage Tank
BLDG	Building
BMP	Best Management Practice
CCG	Combat Communication Group
CE	Civil Engineering
CFR	Code of Federal Regulations
cfs	cubic feet per second
CLSS	Combat Logistics Support Squadron
DF	Diesel Fuel
DOT	Department of Transportation
DRMO	Defense Reutilization and Marketing Office
DTID	Disposal Turn-In Document
ECAMP	Environmental Compliance Assessment and Management Program
EM	Environmental Management
EPA	Environmental Protection Agency
EPI	Environmental Practice Issues
ES	Engineering-Science, Inc.
FRP	Fiberglass Reinforced Plastic
FY	Fiscal Year
gal	gallon
gpd	gallons per day
HAZMAT	Hazardous Materials
HAZWRAP	Hazardous Waste Remedial Action Program
HMC	Hazardous Material Cell
HMCP	Hazardous Materials Contingency Planning
HQ AFRES	Headquarters Air Force Reserves
hr	hour
in	inch
Inc.	Incorporated
IRP	Installation Restoration Program
IWTP	Industrial Wastewater Treatment Plant
kg	kilogram
L	liter
mm	millimeters
MSDS	Material Safety Data Sheets
NOI	Notice of Intent
NOV	Notice of Violation
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
OSHA	Occupational Safety and Health Administration
OWS	Oil/Water Separator

LIST OF ACRONYMS AND ABBREVIATIONS (Continued)

PCB	Polychlorinated Biphenyl
POL	Petroleum, oils, and lubricants
ppb	parts per billion
ppm	parts per million
PPT	Pollution Prevention Team
RAFB	Robins Air Force Base
RCRA	Resource Conservation and Recovery Act
SOP	Standard Operating Procedures
SPCC	Spill Prevention Control and Counter measures
SPTG	Support Group
SWPPP	Storm Water Pollution Prevention Plan
TRC	Technology Repair Center
TSD	Treatment, Storage, and Disposal
UST	Underground Storage Tank
WIMS	Work Information Management System
WR-ALC	Warner Robins - Air Logistics Center

SECTION 1
INTRODUCTION

1.1 AUTHORIZATION

Robins Air Force Base (RAFB) has implemented a Storm Water Pollution Prevention Plan (SWPPP) to minimize the risk of storm water contamination in drainage areas located within the Base boundaries. This was done to be in compliance with the State of Georgia's General Permit requirements for authorization to discharge storm water associated with industrial activity under the National Pollutant Discharge Elimination System Program (NPDES).

This document, authorized under Delivery Order 0121 of the Basic Contract F33615-89-D-4003, was prepared by Engineering-Science, Inc., Atlanta, Georgia for Armstrong Laboratory/OEB, Brooks AFB, Texas, and the Directorate of Environmental Management at RAFB, Warner Robins, Georgia.

1.2 REGULATORY INTENT

A pollution prevention approach to control the discharge of pollutants in storm water runoff has been adopted by the United States Environmental Protection Agency (EPA) as the most environmentally sound and cost-effective way to manage storm water discharges from industrial facilities. Following the evaluations of many comprehensive surveys, the EPA selected reduction or elimination of potential storm water contaminants at the source as a primary focus for improvement of discharge quality. Six factors were identified as potential sources of storm water contamination. The factors were summarized as follows:

- loading/unloading of dry bulk materials or liquids;
- outdoor storage of raw materials or products;
- outdoor process activities;
- dust or particulate generating processes;
- presence of storm water conveyances with illicit connections; and
- inappropriate management and waste disposal practices;

The EPA subsequently established a revised agenda for acceptable storm water discharge practices and began promulgation of a more comprehensive and stringent discharge permitting scheme to supersede the existing system.

On August 16, 1991, a draft NPDES General Permit was proposed by the EPA for public review and comment. The purpose of the permit is to regulate storm water discharges to waters of the United States. After evaluation and incorporation of public comments, the final NPDES General Permit requirements were issued on September 9, 1992. States such as Georgia, where compliance with the new legislation was not mandated by the EPA (because Georgia had been previously given authority to permit storm water discharges), were exempted and left under state environmental protection department jurisdiction.

Nevertheless, the State of Georgia adopted the EPA's NPDES General Permit regulations with minimal modifications. These minor modifications align the State General Permit according to State-specific requirements of the Georgia Water Quality Control Act (Appendix A).

Before being granted authorization to discharge storm water at an industrial facility under the General Permit, the facility must submit a Notice of Intent (NOI) to have the State decide if the General Permit applies to the facility. Unless notified by the Director of the Georgia Environmental Protection Division to the contrary, owners or operators who submit such notification are authorized to discharge storm water associated with industrial activity under the terms and conditions of the General Permit. The NOI functions as the permit application and includes descriptions and classifications of industrial operations at the facility, identification of the receiving waters, indication of the existence of past sampling data, and other relevant information. A copy of the RAFB NOI is included in Appendix B.

Having submitted an NOI, RAFB is authorized to discharge storm water associated with industrial activity according to the requirements of the State of Georgia General Permit.

In addition to the criteria for the development and implementation of a SWPPP, the General Permit contains the following:

- an outline of prohibitions on discharging sources of non-storm water;
- response actions for releases of hazardous substances or oil more than reportable quantities to storm water; and
- requirements for site inspection and monitoring activities.

1.3 PURPOSE

The objective of the SWPPP is to identify and evaluate sources of storm water pollution and to describe and implement pollution reduction measures. To attain this objective, the SWPPP documents the efforts of the pollution prevention team in identifying, describing, and reducing potential pollution sources. Sources were initially identified by conducting a source identification and assessment survey.

Results of the survey are used to implement Best Management Practices (BMPs) to reduce the quantities of contaminants entering the system. Once in place, BMPs are

evaluated periodically according to the SWPPP to measure effectiveness. The Plan is then revised accordingly.

1.4 SWPPP GOAL

RAFB has developed this SWPPP to improve water quality by reducing the potential for pollutants contained in its storm water discharges. Implementation of the procedures discussed in the SWPPP for managing and monitoring storm water will minimize the potential for release of contaminants to the environment and protect human health.

The SWPPP is designed to comply with the following Federal and State legislation and regulations:

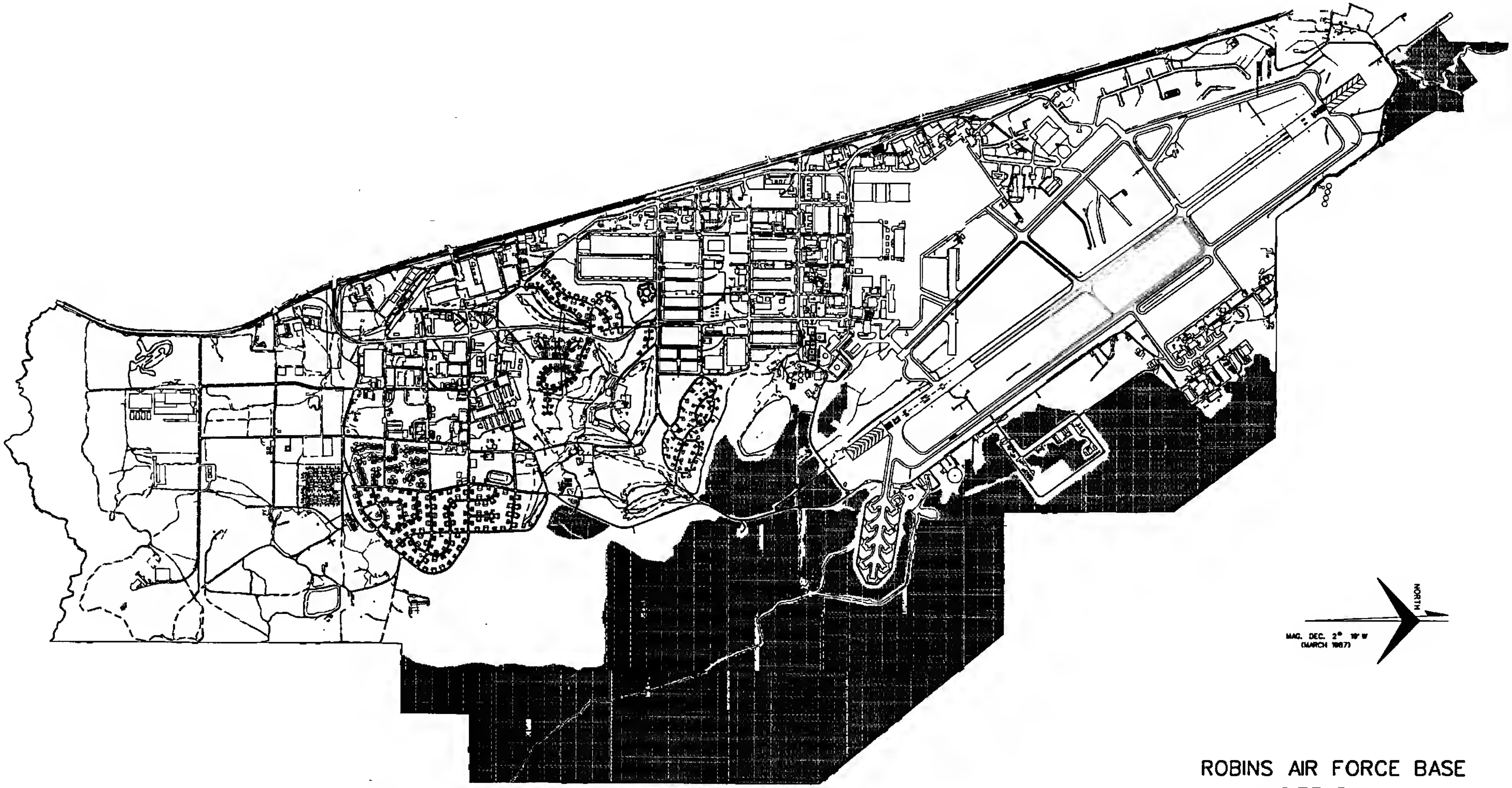
- Federal regulation 40 CFR 122.26 establishes procedures for the discharge of storm waters from industrial and municipal facilities to waters of the United States. Regulation 40 CFR 122.26 requires development of a SWPPP as a requirement for the storm water discharge permitting process.
- Georgia Water Quality Control Act (Georgia Laws 1964, p. 416, as amended).
- State of Georgia General Permit for Authorization to Discharge Under the National Pollutant Discharge Elimination System Storm Water Discharges Associated with Industrial Activity (Appendix C).

1.5 FACILITY BACKGROUND

RAFB is located in central Georgia about 18 miles south of Macon. The Base lies within the lower Ocmulgee River basin and runoff drains mostly to Horse Creek. The boundaries of the Base encompass approximately 8,800 acres with facilities for operation, industrial, administrative, supply, and residential functions. Prominent physiographic features of the area are the Ocmulgee River and the swamp surrounding the east portion of the Base. A Base site plan is shown in Figure 1.1.

The initial construction of RAFB began in 1941 on a 3,000-acre tract of land donated by the City of Macon and Bibb County. The Base was officially activated in March 1942. Subsequent acquisitions by the Federal government increased the size of the installation to its present 8,800 acres. The original intent was to establish RAFB as a maintenance and supply depot, but the installation was also used as a training center. Original facilities included both temporary and permanent structures. After World War II, the Base ceased its training functions while continuing its supply and maintenance role.

Figure 1.1



ROBINS AIR FORCE BASE
SITE PLAN

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A second growth surge began in 1949 when the 14th Air Force Headquarters moved to RAFB, where it remained until deactivated in 1960. The largest construction program commenced in 1958 to prepare facilities for the 19th Bombardment Wing as a tenant organization. Runway enlargement and family housing areas were included in this program. In 1962, the runways were further developed to handle the B-52 and KC-135 aircraft. In 1974, the Technology Repair Center (TRC) was created as a function of the Warner Robins Air Logistics Center (WR-ALC). In addition to depot maintenance responsibility for assigned aircraft, the WR-ALC performs maintenance on aircraft component systems.

The primary missions of RAFB are the responsibilities assigned to the WR-ALC, which has a three-fold mission as follows.

- *It is the worldwide logistics manager for assigned aircraft and commodities.* The WR-ALC is logistics manager for two Air Force transport aircraft (C-141 and C-130) and the F-15 fighter. In addition, electronics equipment managed at WR-ALC ties its support to every element of the aerospace combat force including seven missiles, four helicopters, two utility aircraft, and four drones and remotely piloted vehicles. In addition, RAFB will soon be home for Joint STARS and a B-1B Bomber Wing.
- *It is the repair center for aircraft and five distinct technologies.* WR-ALC is a major technology repair center for airborne electronics for the Air Force. In addition, aircraft repair and maintenance responsibilities for the F-15, C-141, and C-130 are assigned to WR-ALC. WR-ALC has various shops (plating, machining, metal bonding, painting, etc.) that support the major workload activities.
- *It serves as a storage center at wholesale and retail levels for Air Force spare parts and systems.* The third major mission involves receiving, storing, issuing, and transporting material. These functions are carried out in an automated warehouse on Base. Together with its worldwide mission, WR-ALC has responsibility for logistics support of Air Force installations in the geographical area including the eastern United States, Newfoundland, Greenland, Iceland, Bermuda, the Azores, and activities in Europe and the Middle East.

The 653 Support Group (SPTG) provides the services and support to carry out the mission of the WR-ALC and other tenant organizations on RAFB. Major tenant organizations include the following:

- Headquarters Air Force Reserve (HQ AFRES);
- Air Mobility Command's (AMC's) 19th Air Refueling Wing (19 ARW);
- 653rd Combat Logistics Support Squadron (653 CLSS);
- 5th Combat Communication Group (5 CCG); and
- 9th Space Warning Squadron (PAVE-PAWS).

1.6 SUPPORT DOCUMENTS

The following documents were used to develop the SWPPP:

- *Storm Water Management for Industrial Activities, Developing Pollution Prevention Plans and Best Management Practices,* EPA 832-R-92-006, September 1992.
- Authorization to Discharge Under the National Pollutant Discharge Elimination System Storm Water Discharges Associated with Industrial Activity, State of Georgia Draft General Permit, June 1993.
- Hazmat Emergency Materials and Response Plan (SPCC), Robins AFB, July 1992.
- Environmental Compliance Assessment and Management Program (ECAMP) Draft Environmental Findings for Robins AFB, September 1993.
- RAFB Spill/Leak Information, 1993, 1992, 1991.
- Hazardous Waste Management Plan, Robins AFB, September 1993.
- Robins Air Force Base Comprehensive Plan, September 1990.
- Environmental Restoration Program Management Action Plan, Robins AFB, July 1993.
- Hazardous Materials Storage Facility Information Handbook, Building 340, Robins AFB.
- Building Managers List by Facility, Robins AFB, October 1993.
- NPDES Storm Water Sampling Guidance Document, EPA 833-B-92-001, July 1992.

SECTION 2
STORM WATER POLLUTION PREVENTION PLAN ORGANIZATION

2.1 ORGANIZATION OF THE DOCUMENT

This SWPPP is organized into the following nine sections:

Section 1:	Introduction
Section 2:	SWPPP Organization
Section 3:	Facility Assessment
Section 4:	Best Management Practices Identification
Section 5:	Storm Water Contamination Risk Identification
Section 6:	Recommended Improvements
Section 7:	SWPPP Implementation
Section 8:	Storm Water Management Practices for Construction Sites
Section 9:	Outfall Certifications

2.1.1 Introduction

Section 1, Introduction, discusses the authorization for the SWPPP along with its purpose. A brief overview of the history of RAFB is also presented.

2.1.2 Storm Water Pollution Prevention Plan Organization

Section 2, Storm Water Pollution Prevention Plan Organization, describes information forthcoming in succeeding Sections of the Plan. The Pollution Prevention Team (PPT) members and their respective responsibilities to the SWPPP are included.

2.1.3 Facility Assessment

Section 3, Facility Assessment, presents a site map indicating storm water drainage areas and a discussion of outfalls, receiving bodies, applicable permits, and existing structural controls at the outfalls.

Non-storm water discharges and miscellaneous concerns identified during the survey of the underground collection system are presented.

Spill and leak information obtained from RAFB records is presented, and tables identifying significant materials within each drainage area are included.

2.1.4 Best Management Practices Identification

Section 4, Best Management Practices Identification, discusses management practices used at RAFB to minimize contamination of storm water. Management guidelines presented have been developed specifically for the following:

- Hazardous Materials Management;
- Hazardous Waste Management;
- Pesticide Management;
- Petroleum Oil and Lubricant (POL) Management; and
- Shop Operations.

This section of the document also describes RAFB's plan for spill prevention and control, and management practices for personnel training, facility inspections, and preventive maintenance.

2.1.5 Storm Water Contamination Risk Identification

Section 5, Storm Water Contamination Risk Identification, presents the facilities that are a potential source of contamination to storm water due to one or more of the following:

- housekeeping practices;
- preventive maintenance practices;
- spill prevention/containment measures; and
- inspections; or
- spill history.

2.1.6 Recommended Improvements

Section 6, Recommended Improvements, details the potential contaminant sources of the facilities of concern indicated in Section 5 and assigns a priority ranking to each potential contaminant source. This section of the plan also describes additional improvements that should be initiated to reduce runoff contamination.

2.1.7 SWPPP Implementation

Section 7, SWPPP Implementation, presents a schedule for implementing identified storm water management controls described in Section 6 and identifies the party responsible for implementing these aspects of the Plan. This section of the plan also describes compliance evaluation issues including water quality monitoring, annual site inspections, record keeping, and plan revisions.

2.1.8 Storm Water Management Practices for Construction Sites

Section 8, Storm Water Management Practices for Construction Sites, presents a program that will be implemented by RAFB for development and maintenance of structural and non-structural management practices for construction sites.

2.1.9 Outfall Certifications

Section 9, Outfall Certifications, includes the certifications required by the State of Georgia General Permit that storm water outfalls have been tested or evaluated for the presence of non-storm water discharges.

2.2 POLLUTION PREVENTION TEAM

The SWPPP will be implemented by the Environmental Management Directorate (EM) of the Warner Robins Air Logistics Command (WR-ALC). A Pollution Prevent Team (PPT) has been established to aid EM/WR-ALC in storm water pollution prevention. The PPT is responsible for the review, maintenance, and revision of the SWPPP.

2.2.1 Responsibilities of PPT

The SWPPP will be reviewed annually and amended whenever there is a change in operation, maintenance, or construction likely to result in the discharge of pollutants to surface waters by storm water. Organizational responsibilities for different elements of the SWPPP are listed below.

1. The Warner Robins Air Logistics Center Vice Commander, as the chair of the Environmental Protection Committee, will:
   - annually review and recommend changes to the SWPPP;
   - ensure compliance with the NPDES permits and regulations;
   - annually review the status of all environmental permits and the hazardous waste management program; and
   - be responsible for compliance with the requirements of SWPPP.
2. The Environmental Management Directorate will:
   - conduct annual inspection of facilities;
   - update the SWPPP as required by Federal, State, and local regulatory authorities;
   - conduct annual sampling as required by the General Permit;
   - obtain and maintain all necessary permits for proper control of storm water discharges associated with industrial activity;
   - maintain a central file of all documents pertaining to storm water pollution prevention on Base;

- coordinate all environmental inspection activities by the Air Force and outside parties to maintain and improve storm water pollution prevention;
- monitor storm water discharges and initiate corrective action to reduce contaminants identified;
- review all subordinate management plans for incorporation of storm water pollution prevention strategies for applicable facilities; and
- conduct training efforts on storm water pollution prevention, and ensure integration of these concepts in related environmental resource management training.

3. The USAF Clinic Bioenvironmental Engineering Services Director will:
   - review plans to build or modify facilities used to treat, store, or dispose of hazardous waste, including all proposals to establish or relocate accumulation points;
   - provide support to the RAFB waste management program; and
   - provide technical assistance in the proper use of hazardous materials, monitor the work environment, maintain the hazardous materials information library, and provide personnel during mishap response.
4. The Base Civil Engineering organization will coordinate construction activities required to minimize the risk of storm water contamination.
5. The Personnel Directorate, jointly with EM, will revise existing training programs for chemicals and waste handling to incorporate new provisions of the SWPPP.
6. All directorates and hosted units at RAFB will:
   - assure adherence to all provisions of this SWPPP; and
   - appoint representatives to working panels that will evaluate existing provisions of the SWPPP.

2.2.2 Identification of Personnel

The personnel listed in Table 2.1 comprise the PPT.

TABLE 2.1
STORM WATER POLLUTION PREVENTION TEAM

Storm Water PPT Manager: Shawn Politino, WR-ALC/EMC, B'300, 912-926-9777

Storm Water PPT Manager Alternate: Rodney Reid, WR-ALC/EMC, B'300, 912-926-9777

Storm Water PPT Team Members

Name	Organization	Building/ Room #	Base Telephone Extension
Walt Jones	653 CES/CEO	147	66632
William Fennell	653 CES/CEOU	147	63200
MSgt. Almond C. Smith	653 CES/CEOU	147	66632
1Lt. Stephanie McCormack	653 Med Gp/SGB	207	68860
Tsgt. Davis	653 Med Gp/SGB	207	68860
1Lt. Scott Nickerson	653 Med Gp/SGB	207	68860
SMSgt. Jose Rosales	WR/ALC/DSSP	196	62259
SSgt. Anderson	WR/ALC/DSSPS	196	65869
Rodney Reid	WR/ALC/EMC	300/16	69777
Shawn Politino	WR/ALC/EMC	300/16	69777
Dave Bury	WR/ALC/EMP	300	61124
Maj. Branton	WR/ALC/EMR	300/16	60983
Dale Murad	WR/ALC/JACE	215	65995
Terry Petrie	WR/ALC/LBP	50	62847
David Decker	WR/ALC/LBS	50	69232
Maj. Buck Richarson	WR/ALC/LFLL-1	300	65116
Don Duncan	WR/ALC/LGS	300	63706
Willie F. Harris	WR/ALC/LGSF	196	62259
Bill Fuller	WR/ALC/LYPRE	645	61254
Glen McCall	WR/ALC/TIELC	165/40	64930
Marti Sedgwick	WR/ALC/TIMO	165/40	64800
Guss Lane	WR/ALC/TIPE	165	64744

SECTION 3
FACILITY ASSESSMENT

An assessment of potential sources of storm water contamination at RAFB was conducted from October 1993 to December 1993. The assessment consisted of four components:

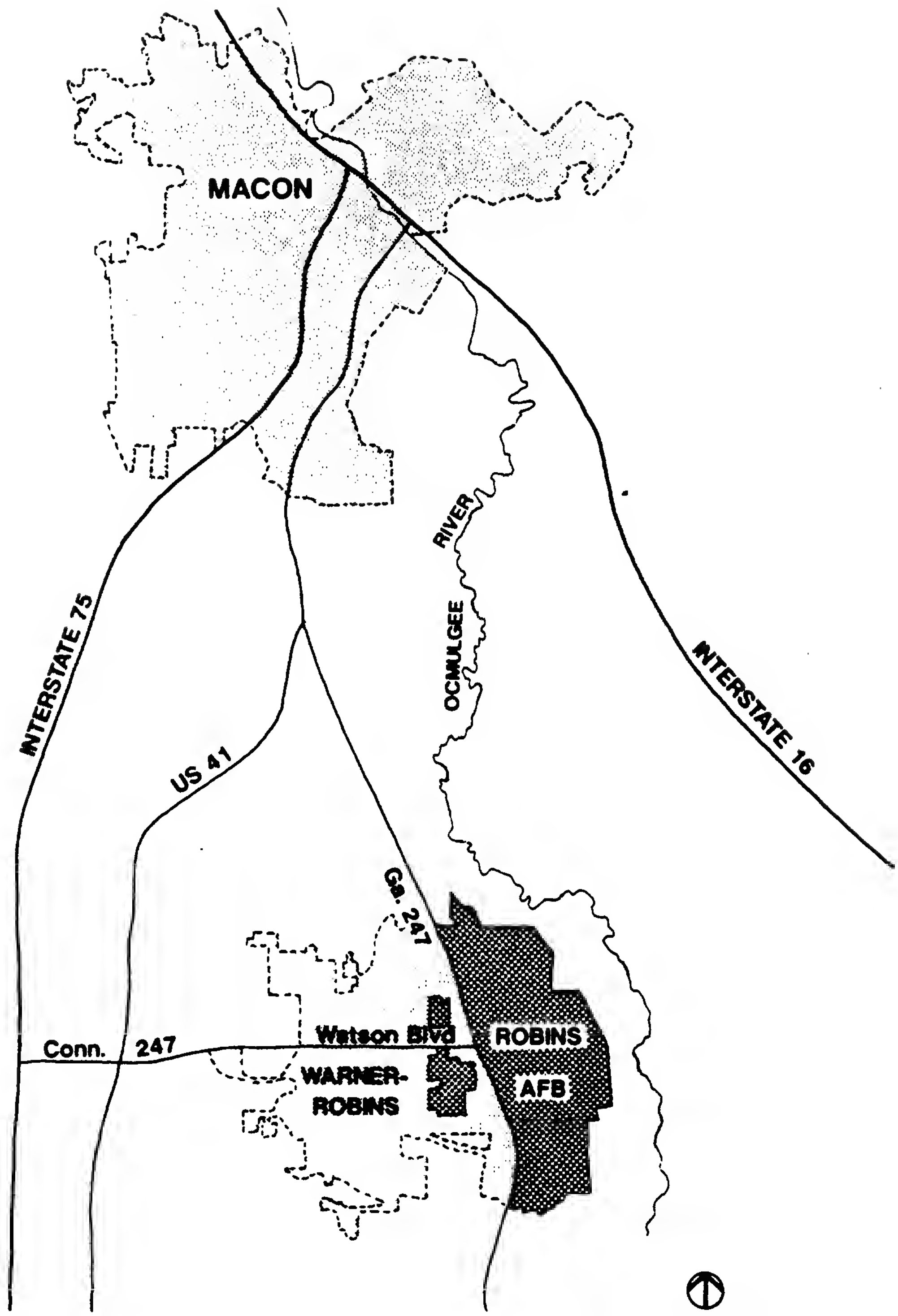
- field survey and delineation of drainage areas;
- field inventory of significant materials;
- records search of spill/leak history; and
- storm water sampling.

The storm water sampling effort is discussed in Appendix H. The other components of the assessment are discussed below.

3.1 DRAINAGE AREAS

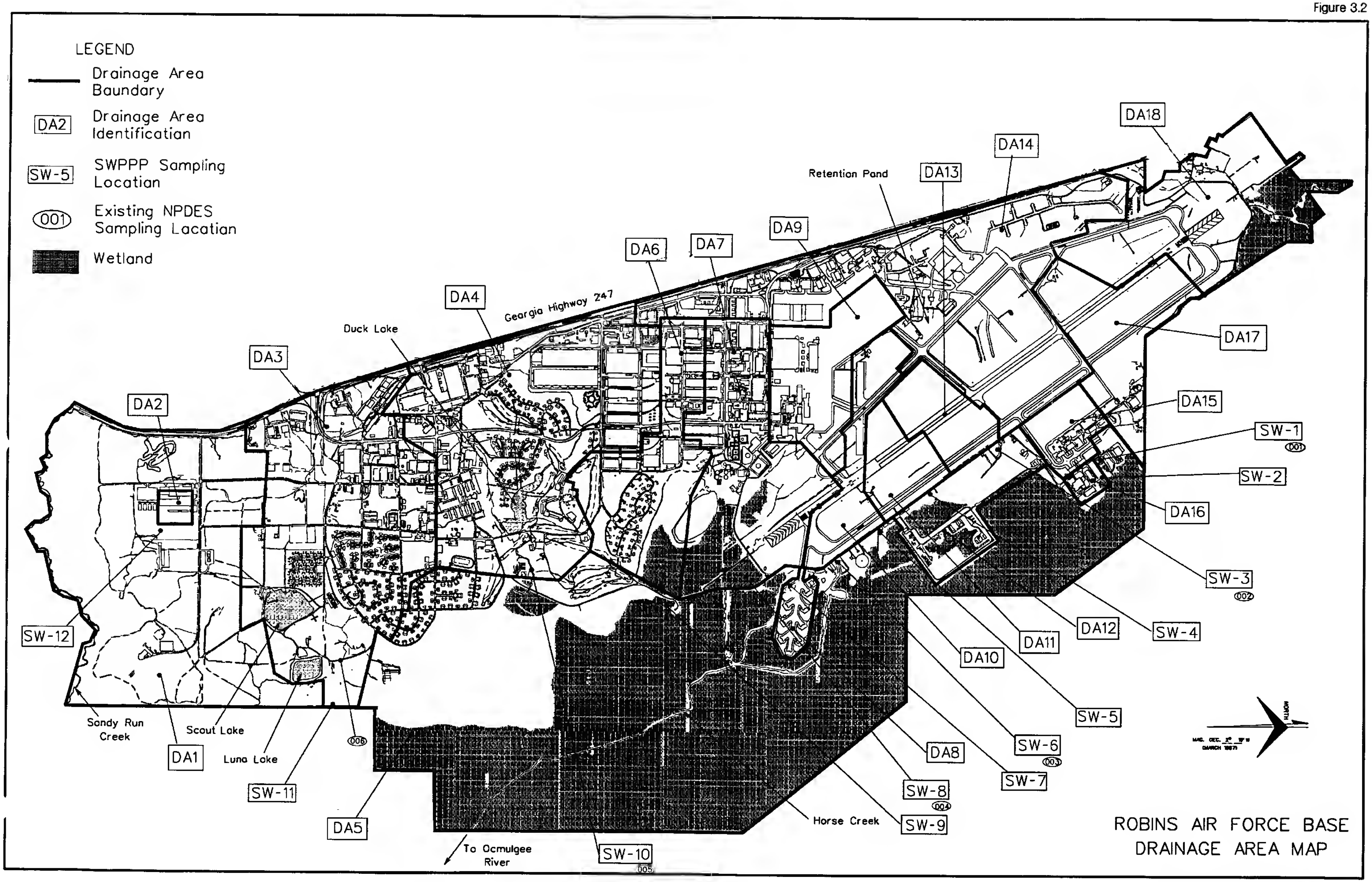
The total area of RAFB is approximately 8,800 acres, including undeveloped wetlands on the eastern side of the Base (Base Comprehensive Plan, 1990). The wetlands are heavily wooded and form part of the flood plain of the Ocmulgee River, located approximately one mile to the east of the Base boundary (Figure 3.1). Drainage from the developed areas flows generally from west to east and discharges to the wetlands or to Horse Creek. Horse Creek is a minor tributary of the Ocmulgee River that crosses the airfield located on the northern half of RAFB and then turns to the southeast on its way to the Ocmulgee. Sandy Run Creek forms the Southern boundary of the Base. The only other significant stream on RAFB is an unnamed stream that flows into Duck Lake. There are three lakes located on the southern half of the Base: Duck Lake, Scout Lake, and Luna Lake.

The description of the storm water drainage patterns at RAFB is an important component of the SWPPP because knowledge of these drainage patterns is an effective tool for the design of a water quality monitoring program and for locating sources of storm water contamination that may be detected during monitoring. For purposes of the SWPPP, 18 individual drainage areas were identified in the developed areas of RAFB. The boundaries of the individual drainage areas, shown in Figure 3.2, were determined from existing Base storm sewer maps and from a field survey. The majority of the individual drainage areas delineated for the SWPPP are areas from which all surface runoff discharges at a single outfall. However, some of the areas drain storm water runoff by multiple outfalls and/or sheet flow. Also, Drainage Areas 3, 4, and 14 receive runon from the City of Warner Robins. Table 3.1 lists each individual drainage area, its size, approximate percentage of land area covered by industrial facilities, estimated



Area Location Map

Figure 3.2



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percent of land surface that is impervious, storm water sampling location, and name of receiving water body. Discussions and maps of the individual drainage areas are presented later in this section.

The northern portion of RAFB is primarily flat and consists of paved areas interspersed with grass islands. The paved portion is comprised of areas for aircraft maintenance, aprons, taxiways, and a runway.

The center (from north to south) portion of RAFB consists of industrial facilities that support aircraft operations, administrative offices, a wastewater treatment plant, two inactive landfills, and a wetlands area. The land surface in the developed areas is primarily paved and slopes toward the flight line. The wetlands lie inside the eastern boundary of RAFB and are generally wooded.

The southern portion of RAFB is comprised of Base housing, community services facilities, a limited number of industrial facilities, a recreational complex that includes a golf course and athletic fields, and outdoor training areas. In addition, there are three lakes and camping areas located in this section of RAFB. With the exception of the limited industrial areas, which are primarily paved, most of the land surface is either grassy or wooded.

Storm water at RAFB drains mostly from west to east by an underground collection system combined with several surface channels. Each drainage area contains a unique system that incorporates conveyances such as swales, ditches, flumes, area drains, curb inlets, and a network of collection pipes. There are several detention ponds located at major storm water outfalls on the east side of RAFB. Descriptions of the collection system in each drainage area are presented later in this section.

3.1.1 Storm Water Collection System Survey

A visual survey of the RAFB storm water collection system was performed in October and November of 1993. The objectives of the survey were as follows:

- update existing Base storm sewer utility maps;
- aid in the delineation of individual drainage areas;
- identify non-storm water discharges to the collection system; and
- identify potential sources of storm water pollution that are associated with industrial activity.

The survey was conducted by comparing structures in the field to utility maps provided by RAFB. Locations and presence or absence of manholes and storm inlets were revised as applicable. Manholes and storm inlets were inspected from their openings at the surface. Pipe size and material, the presence or absence of pipes, pipe orientation, and flow direction through the structure were observed and corrections were annotated on RAFB utility maps.

TABLE 3.1

SELECTED INFORMATION FOR DRAINAGE AREAS

Drainage Area	Total Area (Acres)	Approximate % of Land Area Covered by Industrial Facilities	Estimated Impervious Acres (%)	Storm Water Sampling Location	Figure No. (App. D)	Receiving Surface Water Body
1	791	1	56 (7%)	NA[2]	D.1	Sandy Run Creek, Wetlands
2	16	60	9 (56%)	SW-12	D.2	Drainage Area 1
3	679	10	210 (31%)	SW-11	D.3	Wetlands
4	680	30	301 (44%)	SW-10[1]	D.4	Unnamed Creek
5	1939	0-5	44 (2%)	NA	D.5	Horse Cr., Wetlands
6	278	40	99 (36%)	SW-9	D.6	Wetlands
7	377	50[4]	153 (41%)	SW-8[1]	D.7	Wetlands
8	1.5	100	1.1 (75%)	SW-7	D.8	Wetlands
9	192	80[4]	163 (85%)	SW-6[1]	D.9	Horse Cr.
10	128	5[4]	48 (38%)	SW-5	D.10	Horse Cr.
11	88	0[4]	22 (25%)	SW-4	D.11	Horse Cr.
12	144	5	14 (10%)	NA[2]	D.12	Horse Cr.
13	100	0[4]	20 (20%)	NA[3]	D.13	Horse Cr.
14	675	30[4]	359 (53%)	SW-3[1]	D.14	Horse Cr.
15	67	50	17 (24%)	SW-1[1]	D.15	Wetlands
16	17	100	8 (47%)	SW-2	D.16	Wetlands
17	215	5[4]	46 (22%)	NA[3]	D.17	Wetlands
18	344	0[4]	53 (15%)	NA[3]	D.18	Wetlands

(1) Storm water discharge from drainage area is regulated under NPDES Permit No. GA0002852 (see Appendix E).

(2) Not sampled due to minimal industrial activity or lack of single outfall.

(3) Not sampled because water quality of discharge is believed to be substantially identical to that of Drainage Area 11.

(4) Runways, taxiways, intervening grassy areas, and construction areas are not counted as industrial facilities for the purposes of calculating approximate percent of land covered by industrial activity.

As the field survey was conducted, observations were recorded of conditions near the collection system with the potential to contaminate storm water discharge, including non-storm water discharges. Potential contaminant sources observed, recommendations, and implementation priorities are presented in Tables 3.1.1 through 3.1.18. A map reference number is assigned to each Potential Source of Contamination and is placed on the appropriate drainage area map at the location the potential contaminant source was observed.

Recommended improvements are presented in the tables for each Potential Source of Contamination identified. The recommendations are grouped according to the following categories:

1. **Correct/Inspect/Prevent** - This level recommends best management practices requiring minimal action including improving:
   - housekeeping;
   - preventive maintenance;
   - visual inspections;
   - employee training; and
   - reporting.
2. **Additional Study** - This level recommends further analysis to determine contamination potential and identify the appropriate action.

For non-storm water discharges observed, a cost estimate for implementation of the recommendation is provided. Additionally, a priority for implementation is assigned to each recommended improvement. The schedule for implementation of the recommended improvements is presented in Section 7.

3.1.2 Individual Drainage Area Maps

Maps of the individual drainage areas are presented in Appendix D. The following features are identified on the maps:

- building numbers;
- locations of potential sources of storm water contamination associated with industrial activity;
- locations of outfalls sampled; and
- locations of potential non-storm water discharges identified during the field investigation.

The locations of the following specific potential sources of contamination are identified on each drainage map:

- ASTs;
- USTs;

- OWSs;
- chemical storage areas;
- waste treatment/storage/disposal facilities;
- POL facilities;
- cooling towers;
- spills/leaks;
- IRP sites;
- wash racks; and
- other potential sources of contamination observed during field survey.

Potential sources of contamination identified in Tables 3.1.1 through 3.1.18 (i.e., as a result of the sewer survey) are numbered sequentially in each drainage area and the numbers are placed on the drainage area map at the appropriate locations.

Potential sources of contamination that are associated with facilities of concern (discussed in Sections 5 and 6) are also labeled. Designation of facilities of concern is discussed in Section 5 and detailed descriptions of potential contaminant sources are presented in Section 6.

3.1.3 Drainage Area 1

Drainage Area 1 (Figure D.1, Appendix D) is located at the southern end of RAFB and encompasses approximately 791 acres. Small clusters of industrial facilities are located at the eastern, northern, and western sides of the drainage area and occupy approximately one percent of the land area. Buildings 1600 and 1601, located at the Defense Reutilization and Marketing Office (DRMO) facility, are located in Drainage Area 1. Chemicals and hazardous waste are handled and stored at these buildings and on a portion of the DRMO lot east of Building 1601. However, drainage in the immediate vicinity of these buildings flows to catch basins with valves that are normally left in the closed position for containment of potential spills. The remainder of the drainage area consists of outdoor training areas, outdoor recreation areas, and open space. Sandy Run Creek forms the southern boundary of the drainage area.

The discharge from the DRMO facility within Drainage Area 1 is believed to be substantially identical to the discharge from the DRMO facility within Drainage Area 2. Based on this determination, the outfall at Drainage Area 2 was sampled and considered representative of Drainage Area 1.

TABLE 3.1.1

STORM DRAINAGE COLLECTION SYSTEM SURVEY CONCERNS IN DRAINAGE AREA 1

Nearest Facility No.	Map Reference	Potential Contaminant Source	Recommendation	Priority	Estimated Cost
		No Potential Contaminant Sources Identified			

TABLE 3.1.2

STORM DRAINAGE COLLECTION SYSTEM SURVEY CONCERNS IN DRAINAGE AREA 2

Nearest Facility No.	Map Reference[1]	Potential Contaminant Source	Recommendation	Priority[2]	Estimated Cost
1602	1	Suds and milky suspension in standing water in manhole adjacent to east face of Building 1602.	Additional Study	M	TBD

(1) See Figure D.2, Appendix D.

(2) H - high
M - medium
L - low

TABLE 3.1.3

STORM DRAINAGE COLLECTION SYSTEM SURVEY CONCERNS IN DRAINAGE AREA 3

Nearest Facility No.	Map Reference[1]	Potential Contaminant Source	Recommendation	Priority[2]	Estimated Cost
988	1	Flow in inlet located approximately 150 feet north of Eleventh Street.	Additional Study	H	TBD

(1) See Figure D.3 Appendix D.

(2) H - high
M - medium
L - low

TABLE 3.1.4

STORM DRAINAGE COLLECTION SYSTEM SURVEY CONCERNS IN DRAINAGE AREA 4

Nearest Facility No.	Map Reference[1]	Potential Contaminant Source	Recommendation	Priority[2]	Estimated Cost
288	1	Inlet to NW of Bldg. 288 almost completely covered with excavated material.	Correct/Inspect/Prevent	M	
333	2	Inlet at SE corner of Bldg. 333 is filled with sediment.	Correct/Inspect/Prevent	M	
333	3	Inlet located 200 feet north-northeast of Bldg. 333 is covered with gravel and sand.	Correct/Inspect/Prevent	M	
364	4	Inlet located 150 feet north of NE corner of Bldg. 364 is filled with debris.	Correct/Inspect/Prevent	M	
364	5	Inlet located 75 feet NE of SE corner of Bldg. 364 is covered with debris.	Correct/Inspect/Prevent	M	
380	6	Numerous inlets between Bldgs. 380 and 385 are covered with gravel and grass.	Correct/Inspect/Prevent	M	
385	7	Four storm inlets W of Bldg. 385 are covered with aggregate.	Correct/Inspect/Prevent	L	
635	8	A three-inch pipe emerges from east wall of Bldg. 635 and runs over asphalt to storm inlet; pipe connects to sink in break area.	Correct/Inspect/Prevent	H	TBD
635	9	A two-inch pipe emerges from north wall of Bldg. 635 (Machine Shop); pipe discharges cooling water from a welding machine onto the asphalt; water flows northeast to nearby storm inlet.	Correct/Inspect/Prevent	H	TBD

TABLE 3.1.4 (Continued)

STORM DRAINAGE COLLECTION SYSTEM SURVEY CONCERNS IN DRAINAGE AREA 4

Nearest Facility No.	Map Reference[1]	Potential Contaminant Source	Recommendation	Priority[2]	Estimated Cost
641	10	Six-inch yellow pipe emerges from back wall of Bldg. 641; end of pipe hangs 2 feet above storm inlet.	Correct/Inspect/Prevent	H	TBD
642	11	Flow in inlet at northeast corner of Bldg. 642.	Additional Study	H	TBD
646	12	Oil sheen on water in ditch 150 feet northeast of Bldg. 646.	Additional Study	M	TBD

(1) See Figure D.4, Appendix D
(2) H - high
M - medium
L - low

TABLE 3.1.5

STORM DRAINAGE COLLECTION SYSTEM SURVEY CONCERNS IN DRAINAGE AREA 5

Nearest Facility No.	Map Reference	Potential Contaminant Source	Recommendation	Priority	Estimated Cost
		No Potential Contaminant Sources Identified			

TABLE 3.1.6

STORM DRAINAGE COLLECTION SYSTEM SURVEY CONCERNS IN DRAINAGE AREA 6

Nearest Facility No.	Map Reference[1]	Potential Contaminant Source	Recommendation	Priority[2]	Estimated Cost
301	1	Storm inlets filled with sand at southeast corner of Bldg. 301.	Correct/Inspect/Prevent	M	
354	2	Culvert located northwest of Bldg. 354 is filled with sediment.	Correct/Inspect/Prevent	M	
354	3	Inlet 200 feet south of Bldg. 354 is filled with sediment.	Correct/Inspect/Prevent	M	
393	4	Inlet 150 feet north of Bldg. 393 is filled with sediment.	Correct/Inspect/Prevent	M	

(1) See Figure D.6, Appendix D.

(2) H - high
M - medium
L - low

TABLE 3.1.7

STORM DRAINAGE COLLECTION SYSTEM SURVEY CONCERNS IN DRAINAGE AREA 7

Nearest Facility No.	Map Reference[1]	Potential Contaminant Source	Recommendation	Priority[2]	Estimated Cost
73	1	Oily sheen on water in inlet inside dike NE of Bldg. 73.	Additional Study	M	TBD
158	2	Flow in inlet E of Bldg. 158.	Additional Study	H	TBD
162	3	Steady flow of hot water from the south (12" pipe) into manhole NE of Bldg. 162.	Additional Study	H	TBD
163	4	Flow into manhole SE of Bldg. 163 from west.	Additional Study	H	TBD
165	5	Flow in inlet located between NW corner of building and Byron Street.	Additional Study	H	TBD
165	6	Flow in manhole S of Bldg. 165 from west.	Additional Study	H	TBD
169	7	Hot air and odor in storm inlet on west side of Milledgeville Street SE of Bldg. 169.	Additional Study	H	TBD
169	8	Storm inlet on east side of Milledgeville Street SE of Bldg. 169 is full of debris.	Correct/Inspect/Prevent	M	
169	9	Flow into manhole NE of Bldg. 169 from SW (15" pipe); source appears to be Bldg. 169.	Additional Study	H	TBD
169	10	Possible connection from floor drains inside Bldg. 169 to storm water inlet SE of Bldg. 169.	Additional Study	H	TBD

TABLE 3.1.7 (Continued)

STORM DRAINAGE COLLECTION SYSTEM SURVEY CONCERNS IN DRAINAGE AREA 7

Nearest Facility No.	Map Reference[1]	Potential Contaminant Source	Recommendation	Priority[2]	Estimated Cost
169	11	Flow from south into inlet from pipe below 10" pipe.	Additional Study	H	TBD
173	12	Small pipe that emerges from building wall discharging clear liquid that foamed when agitated.	Correct/Inspect/Prevent	H	TBD
173	Not Shown	Black discharge from 3" dia. pipe emerging from wall on southside of Bldg. 173.	Additional Study	H	TBD
173	13	Small black hose discharging liquid onto ground in picnic area.	Correct/Inspect/Prevent	H	TBD
177	14	Strong steady flow into inlet E of Bldg. 177 from south in 6" pipe; may originate from cooling tower(s).	Additional Study	H	TBD
195	15	Oily residue and oily odor in dry storm inlet W of Bldg. 195.	Additional Study	M	TBD
195	16	Storm inlet outside dike is covered with debris N of Bldg. 195.	Correct/Inspect/Prevent	M	
195	17	Oily sheen on water in inlet inside dike N of Bldg. 195.	Additional Study	M	TBD
195	18	Water flowing in inlet located just outside of dike N of Bldg. 195.	Additional Study	H	TBD
196	19	Culvert under railroad track E of Bldg. 196 is filled with debris.	Correct/Inspect/Prevent	M	
220	20	Flow into inlet located northeast of Bldg. 220.	Additional Study	H	TBD

TABLE 3.1.7 (Continued)

STORM DRAINAGE COLLECTION SYSTEM SURVEY CONCERNS IN DRAINAGE AREA 7

Nearest Facility No.	Map Reference[1]	Potential Contaminant Source	Recommendation	Priority[2]	Estimated Cost
305	21	OWS in vehicle wash stall discharges to storm inlet on east side of facility; sheen on water entering storm inlet from OWS.	Additional Study	H	TBD
308	22	Storm inlet filled with debris.	Correct/Inspect/Prevent	M	
315	23	Inlet located 200 feet SE of Bldg. 315 is filled with debris.	Correct/Inspect/Prevent	M	
Taxiway 1A	24	Strong flow from southwest (possibly from inlet south of Building 209); also flow from south into inlet located south of curved dike that is south of Taxiway 1A.	Additional Study	H	TBD

(1) See Figure D.7, Appendix D.

(2) H - high
M - medium
L - low

TABLE 3.1.8

STORM DRAINAGE COLLECTION SYSTEM SURVEY CONCERNS IN DRAINAGE AREA 8

Nearest Facility No.	Map Reference	Potential Contaminant Source	Recommendation	Priority	Estimated Cost
		No Potential Contaminant Sources Identified			

TABLE 3.1.9

STORM DRAINAGE COLLECTION SYSTEM SURVEY CONCERNS IN DRAINAGE AREA 9

Facility No.	Map Reference[1]	Potential Contaminant Source	Recommendation	Priority[2]	Estimated Cost
104	1	Strong fuel odor and steady flow from west in manhole on east side of Bldg. 104.	Additional Study	H	TBD
110	2	Strong flow into inlet from northwest; strong fuel odor; inlet is 300 feet south of Bldg. 110.	Additional Study	H	TBD
111	3	Greasy film on water in small inlet at southwest corner of passenger terminal.	Additional Study	M	TBD
113	4	Greenish standing water adjacent to tanks located east of Bldg. 113.	Additional Study	M	TBD
121	5	Flow in manhole located east of Bldg. 121.	Additional Study	H	TBD
125	6	Small flow into manhole near southeast corner of Bldg. 125, adjacent to south wall.	Additional Study	H	TBD
127	7	Observed brown liquid discharging from pipe emerging from south wall of Bldg. 127 for 5 minutes; discharge flowed over asphalt to storm inlet. See Photograph DA9-1 in Appendix G.	Correct/Inspect/Prevent	H	TBD
127	8	Strong fuel odor in inlet located 200 feet north of west end of Bldg. 127.	Additional Study	M	TBD
130	9	Steady flow in inlet, 50 feet north of Bldg. 130, from east to north.	Additional Study	H	TBD
140	10	Non-contact cooling water from furnaces is discharged through 6-inch pipe into manhole at northeast corner of north wing of Bldg. 140.	Correct/Inspect/Prevent	H	TBD

TABLE 3.1.9(Continued)

STORM DRAINAGE COLLECTION SYSTEM SURVEY CONCERNS IN DRAINAGE AREA 7

Nearest Facility No.	Map Reference[1]	Potential Contaminant Source	Recommendation	Priority[2]	Estimated Cost
141	11	Above-ground pipe from industrial waste process equipment discharges into storm inlet located west of Bldg. 141. See Photograph DA9-2 in Appendix G.	Correct/Inspect/Prevent	H	TBD
141	12	Strong fuel odor in storm inlet located west of Bldg. 141.	Additional Study	M	TBD
142	13	Inlet near southeast corner of building is filled with sand.	Correct/Inspect/Prevent	M	TBD
209	14	Steady flow from northwest (66" line) into manhole located 150 feet south of Bldg. 209; strong fuel odor.	Additional Study	H	TBD
Air Freight Apron	15	Strong fuel odor in inlets on 48" east/west sewer line on Air Freight Apron, near junction with Taxiway 1B; liquid dripping into one inlet through cracks in sidewall.	Additional Study	H	TBD
North Operational Apron	16	Steady flow of fluid into underground box; box is located on apron 500 feet east of Bldg. 44; discharge flows west to storm inlet; see Photograph DA9-3 in Appendix G.	Additional Study	H	TBD

(1) See Figure D.9, Appendix D.

(2) H - high
M - medium
L - low

TABLE 3.1.10

STORM DRAINAGE COLLECTION SYSTEM SURVEY CONCERNS IN DRAINAGE AREA 10

Nearest Facility No.	Map Reference	Potential Contaminant Source	Recommendation	Priority	Estimated Cost
		No Potential Contaminant Sources Identified			

TABLE 3.1.11

STORM DRAINAGE COLLECTION SYSTEM SURVEY CONCERNS IN DRAINAGE AREA 11

Nearest Facility No.	Map Reference	Potential Contaminant Source	Recommendation	Priority	Estimated Cost
		No Potential Contaminant Sources Identified			

TABLE 3.1.12

STORM DRAINAGE COLLECTION SYSTEM SURVEY CONCERNS IN DRAINAGE AREA 12

Nearest Facility No.	Map Reference[1]	Potential Contaminant Source	Recommendation	Priority[2]	Estimated Cost
98	1	Inlets west of Bldg. 98 are covered by vegetation.	Correct/Inspect/Prevent	L	
2086	2	Brownish water with oily film flowing from culvert.	Additional Study	M	TBD

(1) See Figure D.12, Appendix D.

(2) H - high
M - medium
L - low

TABLE 3.1.13
STORM DRAINAGE COLLECTION SYSTEM SURVEY CONCERNS IN DRAINAGE AREA 13

Nearest Facility No.	Map Reference	Potential Contaminant Source	Recommendation	Priority	Estimated Cost
		No Potential Contaminant Sources Identified			

TABLE 3.1.14

STORM DRAINAGE COLLECTION SYSTEM SURVEY CONCERNS IN DRAINAGE AREA 14

Nearest Facility No.	Map Reference[1]	Potential Contaminant Source	Recommendation	Priority[2]	Estimated Cost
27	1	Retention pond with numerous dead frogs; pond is fed by pipes from Bldg. 131 and building to south.	Additional Study	H	TBD
49	2	Fuel odor in storm inlet NE of Bldg. 49.	Additional Study	M	TBD
53	3	Flow in inlet S of Bldg. 53; suspect Bldg. 53.	Additional Study	H	TBD
54	4	Strong fuel odor in inlet SE of Bldg. 54; odor dissipated over time.	Additional Study	H	TBD
207	5	Flow into inlet at northwest corner of Bldg. 207.	Additional Study	H	TBD
207	6	Milky fluid flowing into inlet at southeast corner of Bldg. 207.	Additional Study	H	TBD
214	7	Flow into inlet located east of south end of Bldg. 214.	Additional Study	H	TBD
215	8	Flow into inlet near SW corner of Bldg. 215 through 6-inch pipe from Bldg. 215.	Correct/Inspect/Prevent	H	TBD
Pad No. 8	9	OWS is releasing petroleum products into nearby swale.	Correct/Inspect/Prevent	H	TBD

(1) See Figure D.14, Appendix D.

(2) H - high
M - medium
L - low

TABLE 3.1.15

STORM DRAINAGE COLLECTION SYSTEM SURVEY CONCERNS IN DRAINAGE AREA 15

Nearest Facility No.	Map Reference[1]	Potential Contaminant Source	Recommendation	Priority[2]	Estimated Cost
2071	1	Oily film on water in inlet 100 ft S of Bldg. 2071.	Additional Study	M	TBD
2082	2	Strong petroleum odor in storm water inlet 250 ft N of Bldg. 2082 N of Borghese Drive.	Additional Study	M	TBD

(1) See Figure D.15, Appendix D.

(2) H - high
M - medium
L - low

TABLE 3.1.16

STORM DRAINAGE COLLECTION SYSTEM SURVEY CONCERNS IN DRAINAGE AREA 16

Nearest Facility No.	Map Reference[1]	Potential Contaminant Source	Recommendation	Priority[2]	Estimated Cost
2078	1	Oily film in inlet S of Bldg. 2078.	Additional Study	M	TBD
2078	2	Soil erosion from construction activity is causing sediment to enter storm water inlet SW of Bldg. 2078.	Correct/Inspect/Prevent	M	
2078	3	Oily film in storm water inlet E of Bldg. 2078.	Additional Study	M	TBD
2079	4	Oil film on water in inlet at intersection of Borghese Drive and Mitchell Place, W of Bldg. 2079.	Additional Study	M	TBD
2079	5	Small flow into inlet on south side of Mitchell Place south of Bldg. 2079; strong fuel odor in inlet.	Additional Study	H	TBD
2083	6	Oily film in storm water inlet 100 ft E of Bldg. 2083.	Additional Study	M	TBD

(1) See Figure D.16, Appendix D.

(2) H - high
M - medium
L - low

TABLE 3.1.17

STORM DRAINAGE COLLECTION SYSTEM SURVEY CONCERNS IN DRAINAGE AREA 17

Nearest Facility No.	Map Reference[1]	Potential Contaminant Source	Recommendation	Priority[2]	Estimated Cost
2059	1	Silt in ditch downstream of ongoing construction activities.	Correct/Inspect/Prevent	M	

(1) See Figure D.17, Appendix D.

(2) H - high
M - medium
L - low

TABLE 3.1.18

STORM DRAINAGE COLLECTION SYSTEM SURVEY CONCERNS IN DRAINAGE AREA 18

Nearest Facility No.	Map Reference	Potential Contaminant Source	Recommendation	Priority	Estimated Cost
		No Potential Contaminant Sources Identified			

3.1.4 Drainage Area 2

Drainage Area 2 (Figure D.2, Appendix D) is located at DRMO on the southern end of RAFB and occupies an area of 16 acres. This drainage area consists of the eastern half of Building 1602, Building 1603, most of the DRMO outdoor storage lot, and a parking lot to the east of the storage lot. Industrial activities include temporary storage of spent oil, electrical transformers, spent batteries, and scrap metal.

Storm water flows from Drainage Area 2 to Drainage Area 1 by several paths. Drainage from the roof of Building 1602 is carried by underground pipe to a drainage ditch to the north and swale to the south. Precipitation falling on the portion of the storage lot to the south of Building 1602 runs south to the swale. Storm water from the rest of the storage lot and from the parking lot to the east is collected by area drains that feed an underground collection system. The underground sewer conveys the storm water to an outfall at the southeastern corner of Drainage Area 2.

An oil/water separator is used as a spill containment reservoir for a bermed area where drums of waste oil are stored outside. Storm water from the bermed area runs into the OWS, which discharges to the underground storm sewer. Potential contaminant sources observed in the storm water collection system during the field survey are described in Table 3.1.2. Corresponding recommendations and a priority ranking of the contaminant sources is also presented. Section 7 outlines an implementation schedule for the listed recommendations.

The sampling location for Drainage Area 2 is designated as SW-12 and is located at the outfall at the southeastern corner of the drainage area. The outfall is located on Figure D.2 and pictured in Appendix F. As described above, this outfall does not collect all of the storm water leaving Drainage Area 2. However, sampling was conducted at this location because the runoff collected here is much more likely to have contacted sources of contamination than runoff leaving Drainage Area 2 by the ditch or the swale. Storm water sampling was conducted at the outfall in December 1993. Sampling results are presented in Appendix H.

3.1.5 Drainage Area 3

Drainage Area 3 (Figure D.3, Appendix D) is located on the southern half of RAFB and occupies an area of 679 acres. Industrial facilities are located at the central, southern, and northwest portions of the drainage area and occupy approximately 10 percent of the land area. The remainder of the drainage area consists of accompanied housing, community facilities, outdoor recreation areas, training areas, and open space. Scout Lake and Luna Lake are located in the southwestern portion of Drainage Area 3. Drainage Area 3 also receives storm water contributions from the City of Warner Robins by a culvert passing under Highway 247. The storm water collection system consists primarily of road-side ditches that are interconnected by culverts. Potential contaminant sources observed in the storm water collection system during the field survey are described in Table 3.1.3.

The outfall for Drainage Area 3 is designated as SW-11 and is located beside a dirt road, approximately one-quarter mile east of the horse stables. The outfall structure consists of a headwall at the end of a culvert that passes under the dirt road. The outfall is located on Figure D.3 and pictured in Appendix F. Storm water sampling was conducted at the outfall in December 1993. Sampling results are presented in Appendix H.

Outfall number 006, located at the end of a culvert that is south of the horse stables, is regulated under RAFB's existing NPDES permit, Permit No. GA0002852 (Appendix E). Under this permit, which expires October 30, 1998, RAFB is authorized to discharge storm water runoff and cooling water at outfall 006. This outfall is also located on Figure D.3.

3.1.6 Drainage Area 4

Drainage Area 4 (Figure D.4, Appendix D) is located on the southern half of the Base and occupies an area of 680 acres. Industrial facilities are located at the northwest and southwest corners of the drainage area and occupy approximately 30 percent of the land area. Sewage Treatment Plant No. 2, located on the eastern side of the drainage area, is no longer an active treatment facility. Wastewater is now pumped from this facility to Sewage Treatment Plant No. 1. The remainder of the drainage area consists of outdoor recreation space (including the golf course), housing, and community and commercial facilities. Drainage Area 4 receives storm water contributions from the City of Warner Robins by an unnamed stream that feeds Duck Lake.

The industrial area at the northwest corner of Drainage Area is drained by an underground storm sewer that feeds into two pipes (one 66-inch and one 48-inch) that discharge into a ravine near Robins Parkway and Fifth Street. In addition, a 36-inch pipe discharges into the same ravine on the east side of Building 385. The ravine conveys storm water to the southeast into Duck Lake. The discharge from Duck Lake, located on its east end, flows into a ravine that leads into a detention pond located further to the east. Both the lake and the detention pond receive direct runoff from portions of the golf course.

The industrial area at the southwest corner of Drainage Area 4 is drained by an underground storm sewer that discharges through a 36-inch pipe into a ditch near Page Road and Ninth Street. The ditch proceeds to the northeast and discharges into a ravine that enters Duck Lake at its eastern end. Potential contaminant sources observed in the storm water collection system during the field survey are described in Table 3.1.4.

The outfall for Drainage Area 4 is designated SW-10 and located on the east side of the detention pond that is downstream of Duck Lake. The outfall structure consists of a V-notch weir installed in a concrete retaining wall. The outfall is located on Figure D.4 and pictured in Appendix F. Storm water sampling was conducted at the weir in December 1993. Sampling results are presented in Appendix H.

This outfall corresponds to RAFB existing outfall number 005 under RAFB's existing NPDES permit, Permit No. GA0002852 (Appendix E). Under this permit, which expires October 30, 1998, RAFB is authorized to discharge storm water runoff and cooling water at outfall 005.

3.1.7 Drainage Area 5

Drainage Area 5 (Figure D.5, Appendix D) is located on the eastern side of RAFB and occupies an area of 1939 acres. There is very limited industrial activity (Fire Training Facility) located in the drainage area. Other facilities located in Drainage Area 5 include housing and a small arms range at the southern end of the drainage area. A portion of the golf course is also situated near the southern end of Drainage Area 5.

An underground storm sewer conducts runoff from the housing area to wetlands located to the east. Storm water from the other facilities in the drainage area flows to the wetlands by sheet flow. Horse Creek crosses Drainage Area 5 from northwest to southeast.

No potential contaminant sources were observed in the storm water collection system during the field survey. Because of the upcoming change in operation at the fire training area, no sampling was performed in Drainage Area 5.

3.1.8 Drainage Area 6

Drainage Area 6 (Figure D.6, Appendix D) is located at the center of RAFB and occupies an area of 278 acres. Industrial facilities cover most of the western half of the drainage area, occupying approximately 40 percent of the land area. The remainder of the drainage area consists of administrative facilities, housing, part of the golf course, and part of an abandoned landfill. Wetlands occupy the northeast corner of Drainage Area 6.

The storm water collection system consists primarily of an underground storm sewer that conducts storm water from the administrative, housing, and industrial areas to the wetland. Potential contaminant sources observed in the storm water collection system during the field survey are described in Table 3.1.6. Corresponding recommendations and costs are also presented.

The outfall for Drainage Area 6 is designated SW-9 and is located on Hannah Road, at the east side of the wetland. The outfall structure consists of the east end of a culvert that runs under Hannah Road and discharges to wetlands. The outfall is located on Figure D.6 and pictured in Appendix F. Storm water sampling was conducted at the outfall in December 1993. Sampling results are presented in Appendix H.

3.1.9 Drainage Area 7

Drainage Area 7 (Figure D.7, Appendix D) is located at the center of RAFB and occupies an area of 377 acres. Industrial facilities cover most of the western half of the drainage area, occupying approximately 50 percent of the land area. Industrial activities

include domestic waste treatment (Sewage Treatment Plant No. 1), staging and classification of drummed chemical waste, vehicle maintenance, application and removal of industrial coatings, bulk storage of fuel (POL tank farm), and steam generation. The remainder of the drainage area consists of administrative facilities and part of the airfield. Wetlands are located at the southeast corner of Drainage Area 7.

The storm water collection system consists primarily of an underground storm sewer that conveys storm water from the administrative and industrial facilities to the wetlands. Storm water flows overland from the airfield to the wetlands. An OWS is located in the storm sewer line that carries storm water away from the POL tank farm. Potential contaminant sources observed in the storm water collection system during the field survey are described in Table 3.1.7. Corresponding recommendations and costs are also presented.

The outfall for Drainage Area 7 is designated as SW-8 and is located in the wetland area on Lights Service Road (the service road paralleling the approach lights for landing aircraft). The outfall consists of two concrete and two metal culverts that run under the road and discharge into a detention pond. The outfall is shown on Figure D.7 and pictured in Appendix F. Storm water samples were collected at the discharge into the pond in November 1993. Sampling results are presented in Appendix H.

This outfall corresponds to RAFB's existing outfall number 004 under RAFB's existing NPDES permit, Permit No. GA0002852 (Appendix E). Under this permit, which expires October 30, 1998, RAFB is authorized to discharge storm water runoff and cooling water at outfall 004.

3.1.10 Drainage Area 8

Drainage Area 8 (Figure D.8, Appendix D) is located on the northern half of RAFB and occupies an area of 1.5 acres. This drainage area consists entirely of the SAC Alert Apron, where KC135 Alert Aircraft are parked.

The storm water collection system consists of short sections of underground storm sewer fed by area storm inlets on the apron. The storm sewer pipes discharge to surrounding wetlands at 12 locations around the perimeter of the apron. No potential contaminant sources were observed in the storm water collection system during the field survey.

There are 12 outfalls that discharge storm water from Drainage Area 8. Because the water quality of each of the discharges from the 12 outfalls is believed to be equivalent to that of the other discharges, storm water sampling was conducted at only one outfall. This sampling location is designated as SW-7 and is located near the southwest corner of Drainage Area 8. The outfall is located on Figure D.8 and pictured in Appendix F. Storm water sampling was conducted at the outfall in November 1993. Sampling results are presented in Appendix H.

3.1.11 Drainage Area 9

Drainage Area 9 (Figure D.9, Appendix D) is located on the northern half of RAFB and occupies an area of 192 acres. Industrial facilities occupy approximately 80 percent of the land area. Industrial activities include aircraft maintenance, air freight, industrial waste treatment and metal plating. The remainder of the drainage area consists of airfield and taxiways.

The storm water collection system consists of an underground storm sewer. The discharge from the pipe network is collected by two 72-inch x 72-inch culverts at a junction located outside the eastern boundary of Drainage Area 9. The storm water is conveyed by the culverts to the outfall, located on the east side of Beale Drive. Potential contaminant sources observed in the storm water collection system during the field survey are described in Table 3.1.9. Corresponding recommendations and costs are also presented.

The outfall for Drainage Area 9 is designated as SW-6. The two 72-inch x 72-inch culverts discharge into a detention pond on the east side of Beale Drive. The outfall is located on Figure 3.2 and D.10 and pictured in Appendix F. Storm water sampling was conducted at the outfall in November 1993. Sampling results are presented in Appendix H.

This outfall corresponds to RAFB's existing outfall number 003 under RAFB's existing NPDES permit, Permit No. GA0002852 (Appendix E). Under this permit, which expires October 30, 1998, RAFB is authorized to discharge storm water runoff and cooling water at outfall 003.

3.1.12 Drainage Area 10

Drainage Area 10 (Figure D.10, Appendix D) is located on the northern half of RAFB and occupies an area of 128 acres. It consists primarily of airfield, taxiways, and runways. Several shops and a chemical storage area are located at the western end of the drainage area and occupy approximately 5 percent of the land area.

The storm water collection system consists of an underground storm sewer that conveys storm water to the outfall, located on the east side of Beale Drive. No potential contaminant sources were observed in the storm water collection system during the field survey.

The outfall for Drainage Area 10 is designated as SW-5 and consists of a weir with a sluice gate. The outfall is located on Figure D.10 and pictured in Appendix F. Storm water sampling was conducted at the outfall in November 1993. Sampling results are presented in Appendix H.

3.1.13 Drainage Area 11

Drainage Area 11 (Figure D.11, Appendix D) is located on the northern half of RAFB and occupies an area of 88 acres. This drainage area consists entirely of airfield and segments of runway and taxiway.

The storm water collection system consists of several storm inlets that feed one segment of underground pipe. The storm inlets are area inlets located in the grassy spaces between the taxiways. The outfall is located on the east side of Beale Drive. No potential contaminant sources were observed in the storm water collection system during the field survey.

The outfall for Drainage Area 11 is designated as SW-4 and consists of a weir with a sluice gate. The outfall is located on Figure D.11 and pictured in Appendix F. Storm water sampling was conducted at the outfall in November 1993. Sampling results are presented in Appendix H.

3.1.14 Drainage Area 12

Drainage Area 12 (Figure D.12, Appendix D) is located on the northern half of RAFB and occupies an area of 144 acres. Industrial facilities are located at the southern and northern ends of the drainage area and occupy approximately 5 percent of the land area. A large construction site is located at the southern end of Drainage Area 2. There appears to be little potential for storm water contamination due to the minimal industrial activities performed in Drainage Area 12. The remainder of the drainage area consists of grassy open space and wetlands. Horse Creek flows southeasterly from the northwestern corner (near the bend in Beale Road) and then skirts the east side of the industrial area at the southern end of Drainage Area 12.

The storm water collection system consists of several short segments of underground pipe that drain the industrial areas. The pipes are fed by storm inlets and discharge to the adjacent wetlands. Numerous culverts convey water below roadbeds in the area. Drainage Area 12 receives storm water contributions from Drainage Areas 11, 13, and 14. Potential contaminant sources observed in the storm water collection system during the field survey are described in Table 3.1.12. Corresponding recommendations and costs are also presented.

Because there is little potential for storm water contamination in this drainage area due to industrial activity, no sampling was conducted.

3.1.15 Drainage Areas 13, 17, and 18

Drainage Areas 13, 17, and 18 (Figures D.13, D.17, and D.18, Appendix D) are located on the northern half of RAFB and occupy areas of 100, 215, and 344 acres, respectively. These drainage areas consist of level, grassy airfield separated by segments of runway and taxiway. With the exception of a small area on the east side of Drainage Area 17, no industrial activities are performed in these areas. There is a small wetland area in the northern portion of Drainage Area 18.

The storm water collection system consists of underground pipes fed by area storm inlets located in the grassy areas between segments of runway and taxiway. The pipe from Drainage Area 13 discharges into drainage Area 12. The pipe from Drainage Area 17 leads to a ditch that ultimately discharges to the wetlands located to the east. Two culverts under Perimeter Road and two underground pipes discharge storm water from Drainage Area 18 into the wetlands area to the north. Potential contaminant sources observed in the storm water collection system during the field survey of Drainage Area 17 are described in Table 3.1.17. Corresponding recommendations and costs are also presented. No contaminant sources were observed in Drainage Areas 13 and 18.

No sampling was performed at outfalls for Drainage Areas 13, 17, and 18 because they are similar to Drainage Area 11 (i.e., areas consisting of grassy airfield separated by segments of runway and taxiway, with little or no industrial activity). Therefore, the effluents from outfalls at Drainage Areas 13, 17, and 18 are believed to be substantially identical to that of Drainage Area 11.

3.1.16 Drainage Area 14

Drainage Area 14 (Figure D.14, Appendix D) is located on the northern portion of RAFB. It is 2.4 miles long from north to south and occupies an area of 675 acres. Industrial facilities are located at the southern end and at the center of the drainage area and occupy approximately 30 percent of the land area. The remainder of the drainage area consists of commercial and administrative facilities, airfield, and outdoor recreation areas. Horse Creek crosses the center of Drainage Area 14 and a 0.1-acre retention pond is located near the center of the drainage area, north of Building 137.

The storm water collection system consists of an underground storm sewer, large culverts, and large ditches. From the south end of Drainage Area 14, the underground sewer conveys storm water to the north into Horse Creek. Horse Creek flows under Highway 247 from the west and carries runoff from the City of Warner Robins onto RAFB. The creek crosses the drainage area by large culverts and ditches that flow northeasterly and gradually turn to the east as they approach the outfall. Runoff from the runways, taxiways, and intervening grassy areas in the northern half of the drainage area flows to Horse Creek by sheet flow and by underground pipes fed by storm inlets. Potential contaminant sources observed in the storm water collection system during the field survey are described in Table 3.1.14. Corresponding recommendations and costs are also presented.

The outfall for Drainage Area 14 is designated as SW-3 and is located east of Beale Drive (inside Drainage Area 12) and south of Building 2022. The outfall structure consists of a headwall for two 72-inch by 72-inch box culverts. The outfall is located on Figure D.14 and pictured in Appendix F. Storm water sampling was conducted at the outfall in November 1993. Sampling results are presented in Appendix H.

This outfall corresponds to RAFB's existing outfall number 002 under RAFB's existing NPDES permit, Permit No. GA0002852 (Appendix E). Under this permit,

which expires October 30, 1998, RAFB is authorized to discharge storm water runoff and cooling water at outfall 002.

3.1.17 Drainage Area 15

Drainage Area 15 (Figure D.15, Appendix D) is located on the northern portion of RAFB and occupies an area of 67 acres. Industrial facilities are located on the northeast side of the drainage area and occupy approximately 50 percent of the land area. The remainder of the drainage area consists of a concrete apron bordered by blast fences.

The storm water collection system consists of an underground storm sewer that conducts storm water from the industrial area to the outfall, located just outside the northern boundary of Drainage Area 15. Runoff from the apron flows northeast to storm inlets that feed the storm sewer. Potential contaminant sources observed in the storm water collection system during the field survey are described in Table 3.1.15. Corresponding recommendations and costs are also presented.

The outfall for Drainage Area 15 is designated as SW-1 and is located on the east side of Borghese Drive. The outfall structure consists of the end of a pipe that discharges into a detention pond. The outfall is located on Figure D.15 and pictured in Appendix F. Stormwater sampling was conducted at the outfall in November 1993. Sampling results are presented in Appendix H.

This outfall corresponds to RAFB's existing outfall number 001 under RAFB's existing NPDES permit, Permit No. GA0002852 (Appendix E). Under this permit, which expires October 30, 1998, RAFB is authorized to discharge storm water runoff and cooling water at outfall 001.

3.1.18 Drainage Area 16

Drainage Area 16 (Figure D.16, Appendix D) is located on the northern half of RAFB and occupies an area of 17 acres. Industrial facilities occupy all of the land area.

The storm water collection system consists primarily of an underground sewer system that conveys storm water to the wetlands that border Drainage Area 16. Potential contaminant sources observed in the storm water collection system during the field survey are described in Table 3.1.16. Corresponding recommendations and costs are also presented.

Outfalls for Drainage Area 16 are located on the northwestern, northeastern, and southeastern sides of the drainage area. The outfall structures consist of pipes that discharge to the wetlands. The sampling location for Drainage Area 16 is designated as SW-2 and is located at the outfall on the northwestern side of the drainage area. This outfall was chosen for sampling because storm water collected here is more likely to have contacted sources of contamination. The outfall is located on Figure D.16 and pictured in Appendix F. Storm water sampling was conducted at the outfall in November 1993. Sampling results are presented in Appendix H.

3.2 SIGNIFICANT MATERIALS INVENTORY

Significant material, as defined in 40 CFR 122.26, "includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substances designated under Section 101(14) of CERCLA; any chemical the facility is required to report pursuant to Section 313 of Title III of SARA; fertilizers; pesticides; and waste products such as ashes; slag and sludge that have the potential to be released with storm water discharges."

Significant materials having the potential for exposure to storm water were identified for facilities within each drainage area. The material inventory information gathered included:

- type and quantity of material stored;
- storage location;
- method of storage;
- loading and unloading operations; and
- material management practices.

Individual drainage area maps are included in Appendix D to show the locations of facilities utilizing significant materials.

3.2.1 Drainage Area 1

Building 1400 (PAVE PAWS) is located within Drainage Area 1. Building 1400 has several large-volume above-ground storage tanks (ASTs) and underground storage tanks (USTs). The material inventory of chemicals stored at this facility is presented in Table 3.2.1.

3.2.2 Drainage Area 2

The DRMO is located within Drainage Area 2. The DRMO is a hazardous and nonhazardous waste storage facility. The material inventory of chemicals stored at this facility is presented in Table 3.2.2.

3.2.3 Drainage Area 3

Several chemical storage areas, two service stations, large capacity USTs, oil/water separators, and a pesticide storage building are located within Drainage Area 3. The inventory of chemicals stored at these facilities is presented in Table 3.2.3.

3.2.4 Drainage Area 4

Industrial type facilities within Drainage Area 4 consist predominantly of chemical storage facilities and ASTs. The hazardous materials storage and receiving area and the

circuit plating shop are both located within this drainage area. The material inventory of chemicals stored at facilities within Drainage Area 4 is presented in Table 3.2.4.

3.2.5 Drainage Area 5

One AST and one UST were identified within Drainage Area 5. The fuels stored within these tanks are presented in Table 3.2.5.

3.2.6 Drainage Area 6

Facilities within Drainage Area 6 include: two chemical storage facilities, USTs, a vehicle maintenance shop, and a dioxin storage building. An inventory of materials stored at these facilities is presented in Table 3.2.6.

3.2.7 Drainage Area 7

Facilities within Drainage Area 7 include a variety of chemical storage areas and industrial shops. An inventory of materials stored at these facilities is presented in Table 3.2.7.

3.2.8 Drainage Area 8

One facility, CRW Readiness Building 12, is located in Drainage area 8. Building 12 has one large capacity UST. The type and quantity of material stored within this tank are shown in Table 3.2.8.

3.2.9 Drainage Area 9

Drainage Area 9 is an industrial area which includes chemical storage areas, Plating Shop Building 142, and the Industrial Waste Treatment Plants (IWPT) Numbers 1 and 2. Materials stored at these facilities are presented in Table 3.2.9.

3.2.10 Drainage Area 10

Drainage area 10 contains one hydraulic and lube oil storage facility. The quantity and method of storage of materials for this facility are presented in Table 3.2.10.

3.2.11 Drainage Area 11

No facilities with the potential to impact storm water due to industrial activity are located within Drainage Area 11.

3.2.12 Drainage Area 12

Four UST facilities including large-capacity JP-4 storage tanks are located in Drainage Area 12. Materials stored in Drainage Area 12 are presented in Table 3.2.12.

3.2.13 Drainage Area 13

No facilities with the potential to impact storm water due to industrial activity are located within Drainage Area 13.

3.2.14 Drainage Area 14

Drainage Area 14 contains facilities including chemical storage sites, USTs, ASTs, painting and maintenance hangars, and an industrial wastewater pretreatment facility for paint wastes. Materials stored in Drainage Area 14 are presented in Table 3.2.14.

3.2.15 Drainage Area 15

Drainage Area 15 contains several OWSs, two large capacity USTs, and a painting facility chemical site. An inventory of materials is presented in Table 3.2.15.

3.2.16 Drainage Area 16

Two facilities were identified within Drainage Area 16. These facilities include one UST and one chemical storage shed. An inventory of materials is presented in Table 3.2.16.

3.2.17 Drainage Area 17

Drainage Area 17 contains one AST facility. The material type and quantity stored within this tank are listed in Table 3.2.17.

3.2.18 Drainage Area 18

No facilities with the potential to impact storm water due to industrial activity are located within Drainage Area 18.

Table 3.2.1
Significant Material Inventory
Drainage Area 1

Location/ Facility No.	Significant Material	Quantity Stored	Method of Storage	Material Management Practice
1400	Lube oil	1,500 gal	AST	AST is enclosed in 2-foot dike.
	DF-2	48,000 gal	(3) USTs	UST loading area has concrete basin which flows to 1,500 gal. holding tank and OWS.
	Ethylene Glycol	4,000 gal	AST	AST is enclosed in 2-ft dike; historically stored in chemical area.
1601	Industrial Wastes 1,1,1-Trichloroethane	unknown	55-gal drums 55-gal drums 55-gal drums 55-gal drums	Facility is partially bermed; outside chemical drum staging area drains to valved catch basin.

Table 3.2.2
Significant Material Inventory
Drainage Area 2

Location/ Facility No.	Significant Material	Quantity Stored	Method of Storage	Material Management Practice
1603	Industrial Wastes Waste Oil PCBs 1,1,1-Trichloroethane Diesel	Unknown	55-gal drums 55-gal drums 55-gal drums 55-gal drums AST	Facility is partially bermed; waste oil staging area drains to OWS that discharges to storm drain.

Table 3.2.3
Significant Material Inventory
Drainage Area 3

Location/ Facility No.	Significant Material	Quantity Stored	Method of Storage	Material Management Practice
655/656	Antifreeze Cleaning compound Lube oil, diesel	55 gal 55 gal Unknown	55-gal drum 55-gal drum Unknown	Drums are stored in bermed area with valved drainage; historical chemical storage area
670	Petroleum waste MEK/Waste MEK Solvent contaminated Rags Paint waste Paint thinner/Paint waste Paint stripper	165 gal 1320 gal unknown 55 gal 55 gal 55 gal	55-gal drums 55-gal drums 55-gal drums 55-gal drum 55-gal drum 55-gal drum	Materials are stored in a roofed, bermed storage compound with valved drain.
922	Waste oil	550 gal	Catchbasin	Catchbasin is emptied once per month.
	Gasoline	50,000 gal	(5) USTs	5 10,000-gal USTs have overfill monitiors and a 30-gal catchbasin.
	Antifreeze, Waste antifrz	110 gal	55-gal drums	Stored outside on ground.
	Lube oil	55 gal	55-gal drum	Stored in main shop.
948	DF-2	500 gal	AST	AST has double contained walls and overfill monitor.
956	Diesel	500 gal	AST	AST has double contained walls and overfill monitor.
959	Gasoline Paint	5 gal 1 gal	5 gal container 1 gal can	Materials are stored in a roofed, bermed chemcial storage facility.
963	DF-2	500 gal	UST	Not identified
985	Cleaning compound	110 gal	55-gal drums	Stored in bermed washrack area.
	Gasoline	15 gal	5 gal cans	Stored on pavement.
	Waste oil Engine oil Degreaser	440 gal 110 gal 110 gal	55-gal drums 55-gal drums 55-gal drums	Waste oil stored in bermed chemical storage area or in main shop.
993	DF-2	2,000 gal	UST	Not identified
994	DF-2	1,000 gal	UST	Not identified
1364	Diesel JP-4 Gasoline Oil Antifreeze Cleaning compound Waste oil	1595 gal 1595 gal 1375 gal 330 gal 330 gal 110 gal 600 gal	55-gal drums 55-gal drums 55-gal drums 55-gal drums 55-gal drums 55-gal drums Catchbasin	Many drums are stored in portable dikes and entire facility is bermed with drainage to OWS.
1550	Paint Sealer	unknown 55 gal	unknown 55-gal drum	Materials belong to contractor and are stored onsite temporarily.
1549	Pesticides	unknown	Small quantity containers	Pesticides are stored in bermed area with drainage to holding tanks and inside building with secondary contaminant.
	Lube oil	55 gal	55-gal drum	Drum on rack with drip pan.
	Flammable liquids	unknown	cans	Material stored in storage locker.

Table 3.2.4
Significant Material Inventory
Drainage Area 4

Location/ Facility No.	Significant Material	Quantity Stored	Method of Storage	Material Management Practice
263	DF-2	250 gal	AST	AST has double contained tank walls and overfill monitor.
270	Hydraulic oil Cutting oil Lube oil	1210 gal 110 gal 1/2 gal	55-gal drums 55-gal drums 1/2 gal can	Materials are stored in an outdoor, roofed, bermed storage compound.
	HCL	unknown	55-gal drums	Historically stored onsite.
272/275	Cellulose nitrate Laquer thinner Latex Paint	55 gal 55 gal 300 gal 300 gal	55-gal drum 55-gal drum 10-gal container 10-gal container	Materials are stored in a roofed, bermed chemical storage area or in outdoor sheds.
	Waste thinner Waste paint	unknown unknown	85-gal drums 85-gal drums	Waste drums are stored in a portable dike.
286/292	Cleaning compounds	165 gal	55-gal drums	Drums are stored in portable dike.
286	Chemical Storage			Not identified
294	Hydraulic oil Motor oil Lube oil Waste oil	unknown unknown unknown 275 gal	10 gal containers 10 gal container 10 gal container 55-gal drums	Some materials are stored under shop roof. Secondary containment (portable dike) is present .
340	See Appendix Attached			
376	DF-2 Hazardous Materials	250 gal	UST	Not identified
377	Denatured alcohol	55 gal	55-gal drum	Material stored inside building. Triple rinsed drums temporarily outside.
	DF-2	250 gal	AST	AST has double contained wall and overfill monitor.
511	Hydrated lime	100 lbs	Bag	Not identified
	DF-2	500 gal	AST	AST has double contained tank and overfill monitor.
595	DF-2	2,000 gal	UST	Not identified
603	Oil/water waste	55 gal	AST	Not identified
606	DF-2	275 gal	AST	Not identified
608	Oil/water waste	55 gal	AST	Not identified
614	Ethylene glychol Diesel Lube oil Antifreeze Antifreeze Mogas Solvent soaked rags MEK Paint	55 gal 550 gal 550 gal 100 gal 55 gal 55 gal unknown 55 gal 20 gal	55-gal drum Tank (portable) Tank (portable) 5-10 cans 55-gal drum 55-gal drum bags 55-gal drum 5 gal buckets	All materials are stored in drums or cans in outdoor, roofed chemical storage area; chemical storage area is surrounded by 6-in berm; drainage is not valved and flows to storm ditch.

Table 3.2.4 (Continued)
Significant Material Inventory
Drainage Area 4

Location/ Facility No.	Significant Material	Quantity Stored	Method of Storage	Material Management Practice
629	Diesel	2,000 gal	UST	Not identified
636	Trichlorotrifluoroethane 1,1,1-Trichloroethane Isopropyl alcohol Cellulose nitrate Thinner MEK Copper chloride Silicone Freon Ethylene glycol Sulfuric acid	440 gal 1,320 gal 165 gal 165 gal 165 gal 165 gal 165 gal 55 gal 55 gal 55 gal 165 gal	55-gal drums 55-gal drums 55-gal drums 55-gal drums 55-gal drums 55-gal drums 55-gal drums 55-gal drum 55-gal drum 55-gal drum 55-gal drums	Drums stored in outdoor storage area on pallets.
638	Toluene Trichcloroethylene Acids	unknown	unknown	Small quantites of materials were stored in outdoor storage sheds; site appears to be inactive except for empty container storage.
640	Beryllium oxide	55 gal	55-gal drum	Drum stored outside on pallet;
	Diesel	unknown	unknown	spills evident on grass and pavement;
	Paint	unknown	unknown	Spills evident on pavement.
644	Turbo oil	55 gal	55-gal drum	55 gal drum is stored on rack with drip pan and roof.
	Diesel	Unknown	(2) ASTs	ASTs have no secondary containment.
645	Beryllium oxide	385 gal	55-gal drums	Not identified
648	Hydrated lime	100 lbs	bags	Not identified
700	Diesel	5,000 gal	AST	AST has double contained tank walls.
701	DF-2	500 gal	UST	Drums stored outside on pallets.
812	DF-2	1,500 gal	UST	Stored in outdoor shed
930	DF-2	275 gal	UST	Not identified

Attachment to Table 3.2.4
Significant Material Inventory
Facility 340

Class I and II Flammables Room

Acetone
Denatured alcohol
Enamel
Epoxy
Insulating compound
Isopropanol
Lacquer
Layout dye
Methanol
Methyl ethyl ketone (MEK)
Methyl isobutyl ketone
Naphtha
N-heptane
N-butyl alcohol
Polyurethane
2-propanol
Thinners
Toluene
Urethane
Adhesive
Aluminum roof coating
Chorpyrifos + xylene
Copier toner
Corrosion preventative
Diethylenetriamine
Magnetic inspection compound
Mineral spirits (thinner)
N,N-dimethyl foramide
Paint
Plate cleaning solution
Resin
Sealing compound
Solvent
Varnish

Acid Room

Accelagold
Corrosion compound
Hydrochloric acid
Lead Fluoborate
Nickel plating
Phosphoric acid
Photo developer
Photo fixer
Reflow flux
Solder flux
Stannous fluoroborate
Sulfuric acid
Tin/lead stripper

Class III Flammables Area

Adhesive, acoustic
Cleaning compound
Cleaning solvent
Diethylene glycol monobutyl ether
Monobutyl ether
Removing compound
Rifle bore cleaner

Gas Storage Room

Ammonia
Chlorine
Fuel system compound
Calibrating fluid
Deicing fluid
Oils, Miscellaneous: Motor

Hazardous Materials Room

Ammonium hydroxide
Ammonium nitrate
Antifreeze
Barium (solid, poisonous)
Beryllium (contamination hazard)
Cleaning compound
Conathane, Pt. A
Dichloromethane
Freon
Heat transfer fluid
Lamination compound
Lapping compound
Rodenticide
Tallow
Trichloroethane
Trichloroethylene
VT Solution
Coal for bitumen
Paint remover
Methyl ethyl ketone (MEK)
Antifreeze
Trichloroethane
Freon
Ethyl acetate
Propylene glycol
Ketone
Diethylamine
Potassium cyanide

Table 3.2.5
Significant Material Inventory
Drainage Area 5

Location/ Facility No.	Significant Material	Quantity Stored	Method of Storage	Material Management Practice
1	DF-2	5,000 gal	UST	Not identified
9	DF-2	2,000 gal	UST	Not identified

Table 3.2.6
Significant Material Inventory
Drainage Area 6

Location/ Facility No.	Significant Material	Quantity Stored	Method of Storage	Material Management Practice
226	DF-2	2,000 gal	UST	Not identified
	DF-2	1,500 gal	UST	Tank has overfill monitor.
231	DF-2	2,000 gal	UST	UST is fiberglass.
300	DF-2	1010 gal	UST	Not identified
304	Waste oil Gear oil Hydraulic fluid	unknown unknown unknown	55-gal drums 10-gal cans 5-gal cans	All materials are stored in drums or cans in outdoor, roofed chemical storage area; chemical storage area is surrounded by 4-in berm.
317	Waste engine oil	unknown	Equipment	Tarps placed under trucks.
350	DF-2	2200 gal	UST	Not identified
354	Paint wastes Oil Used brushes, rollers, rags	unknown unknown unknown unknown	55-gal drums 55-gal drums 55-gal drums 55-gal drums	All materials are stored in drums or cans in outdoor, roofed chemical storage area; chemical storage area is surrounded by 4-in berm.
	Mineral spirits Thinner	unknown unknown	55-gal drums 55-gal drums	Stored in main shop.
369	Dioxin	unknown	55-gal drums	Dioxin stored in sealed drums which are contained in building; building has no floor drains; drums are checked weekly for leaks.

Table 3.2.7
Significant Material Inventory
Drainage Area 7

Location/ Facility No.	Significant Material	Quantity Stored	Method of Storage	Material Management Practice
158	Freon 113	165 gal	55-gal drums	Freon drums on rack with drip pans which are used during drum removal.
	Waste oil	unknown	unknown	Vacuum pumps have drip pans.
	DF-2	unknown	UST	DF-2 was historically stored onsite.
	Acetone Coolant	unknown unknown	10 gal cans 1-gal containers	Not identified
165	Hydrochloric acid Sodium Chloride Sulfuric acid Acetates Phosphoric acid Paint	unknown unknown unknown unknown unknown unknown	1-gal containers 1-gal containers 1-gal containers 1-gal containers 1-gal containers 5-gal buckets	Not identified
169	MEK	unknown	55-gal drums	MEK stored inside.
	Paint	unknown	unknown	Not identified
171	Waste synthetic lube oil Waste ethylene glycol	1375 gal 1375 gal	55-gal drums 55-gal drums	Materials are stored in sealed drums within roofed, fenced chemical site; chemical site is bermed.
174	Solvent	unknown	unknown	Solvent historically used at facility.
177	DF-2	unknown	AST	Not identified
180	Alodine Corrisive cleaner	unknown unknown	55-gal drums 55-gal drums	Not identified
181(Cell 6)	Cleaning compounds CD-850 Alodine Paint and Petro wastes	330 gal 55 gal unknown unknown	55-gal drum 55-gal drum unknown unknown	Not identified
181(Cell 4)	Paint thinner Paint wastes Paint	200 gal 200 gal 200 gal	5-gal cans 5-gal cans 5-gal cans	Materials are stored in sealed cans in outdoor storage sheds located in a partially bermed area; waste materials are stored in sealed 55-gal drums contained within a potable dike.
183	DF-2	unknown	AST	Not identified
190	Waste oil Lube oil Trans. fluid Grease	100 gal 55 gal 55 gal 20 gal	Portable AST 55-gal drum 55-gal drum 20-gal drum	Materials are stored in a roofed, bermed chemical storage area.
196	DF-2	500 gal	AST	Double contained walls; over-fill monitor
197	DF-2 Mogas Engine oil	unknown unknown 165 gal	AST AST 55- and 25-gal drums	ASTs and oil storage areas are bermed.
225	DF-2	5,000 gal	UST	Not identified
227	DF-2	750 gal	AST	Not identified

Table 3.2.7 (Continued)
Significant Material Inventory
Drainage Area 7

Location/ Facility No.	Significant Material	Quantity Stored	Method of Storage	Material Management Practice
228	DF-2	10,000 gal	UST	Not identified
308	Sulfuric acid batteries	2	Not identified	Batteries are stored temporarily on pavement under shop roof.
	Transmission and brake fluid	5 gal ea.	Containers	Transmission and brake fluid are stored on pavement under shop roof during use.
	Antifreeze	600 gal	AST	Drip pan under AST spigot.
	Sulfuric acid batteries	5	Pallet	Not identified
314	Diesel fuel	1,500 gal	UST	Not identified
318	Soap and Deodorant Oil Grease Diesel Gasoline Waste paint	55 gal ea. 5 gal 1 gal 25 gal 4 gal 3 gal	55-gal drums Can Can Portable tank Can 5-gal containers	Stored in shed.
319	Alkaline soap	220 gal	55-gal drums	Stored in bermed washrack area.
	Aerosol cans, oil, gas, diesel, hydraulic fluid Antifreeze	unknown unknown unknown	55-gal drums 5-gal cans 5-gal cans	Stored in main shop.
352	Diesel	500 gal	UST	Not identified
	Industrial Sludge	unknown	Pile	Sludge is contained in building; building has no drains.
360	DF-2	300 gal	AST	AST is contained in building.
361	Petroleum oil wastes Sodium nitrate Alcohol PD-680 1,1,1-Trichloroethane 1,1,1-Trichloroethane/ sludge Hydrosulfide Hydorgen peroxide Sodium nitrate HCL Trisodium phosphate Inds. wastes	various qty. various qty. various qty. various qty. various qty. various qty. various qty. various qty. various qty. various qty. various qty. various qty. various qty.	55-gal drums 55-gal drums 55-gal drums 55-gal drums 55-gal drums 55-gal drums 55-gal drums 55-gal drums 55-gal drums 55-gal drums 55-gal drums 55-gal drums 55-gal drums	Hazardous wastes are stored in sealed 55-gal drums; drums are temporarily stored on pallets outside with no secondary containment until they are moved to to either the outdoor, roofed and bermed chem site or into a bermed storage building.
Near 361	Paint Adhesive remover	220 gal 240 gal	10-gal buckets 10-gal buckets	Not identified
363	DF-2	6,000 gal	AST	AST contained in 3-ft dike.

Table 3.2.7 (Continued)
Significant Material Inventory
Drainage Area 7

Location/ Facility No.	Significant Material	Quantity Stored	Method of Storage	Material Management Practice
371	Lube oil	110 gal	55-gal drums	All materials are stored in a roofed,
	White oil	110 gal	55-gal drums	bermed chemical storage area
	140 Solvent	110 gal	55-gal drums	with drip pans under open
	Motor oil	330 gal	55-gal drums	containers.
	Calcium hydrochlorate	55 gal	55-gal drum	
	Antifoam emulsion with Sulfuric acid	110 gal	55-gal drums	
	Waste oil	55 gal	55-gal drum	
	Citrosolve	55 gal	55-gal drum	
	Thinner	30 gal	10-gal drums	

Table 3.2.8
Significant Material Inventory
Drainage Area 8

Location/ Facility No.	Significant Material	Quantity Stored	Method of Storage	Material Management Practice
12	DF-2	5,000 gal	UST	Not identified

Table 3.2.9
Significant Material Inventory
Drainage Area 9

Location/ Facility No.	Significant Material	Quantity Stored	Method of Storage	Material Management Practice
110/125(3)	Polysulfides, Alodine	55 gal ea.	55-gal drums	Not identified
	PD-680, Trichlor-	55 gal ea.	55-gal drums	
	ethylene, cleaning fluids	55 gal ea.	55-gal drums	
	oil, naptha, marol, citri-	55 gal ea.	55-gal drums	
	kleen, chromates	55 gal ea.	55-gal drums	
140	Solvent 140	275 gal	55-gal drums	Not identified
	Acetone	275 gal	55-gal drums	
	Trichloroethylene	275 gal	55-gal drums	
	Diesel	275 gal	55-gal drums	
	Lube oil	275 gal	55-gal drums	
142	Diesel	1,000 gal	AST	AST enclosed by 1-foot dike with valved drain.
	Air deliquescent	500 gal	AST	Not identified
	Cimcool (coolent)	unknown	Not identified	
	Cyanide	unknown	AST	
	1,1,1-Trichloroethane	unknown	55-gal drum	
	Chromic acid waste	unknown	AST	
143	Engine oil	110 gal	55-gal drums	Not identified
	Hydraulic fluid	55 gal	55-gal drum	
147	Inds. waste water	unknown	unknown	Not identified
148	Hydraulic oil	55 gal	55-gal drum	Drums are on racks with drip pans.
	Antifreeze	55 gal	55-gal drum	
	Synthetic lube oil	55 gal	55-gal drum	
	Lube oil	165 gal	55-gal drums	

Table 3.2.10
Significant Material Inventory
Drainage Area 10

Location/ Facility No.	Significant Material	Quantity Stored	Method of Storage	Material Management Practice
40	Lube oil Hydraulic oil	100 quarts 100 quarts 55 gal	1 quart cans 1 quart cans 55-gal drum	Materials are stored in a roofed and bermed chemical storage area.

Table 3.2.11
Significant Material Inventory
Drainage Area 11

Location/ Facility No.	Significant Material	Quantity Stored	Method of Storage	Material Management Practice

No Significant Material Inventory at Drainage Area 11

Table 3.2.12
Significant Material Inventory
Drainage Area 12

Location/ Facility No.	Significant Material	Quantity Stored	Method of Storage	Material Management Practice
8	DF-2	200 gal	UST	Not identified
74	DF-2	5,000 gal	UST	Not identified
88	DF-2	1,000 gal	UST	Not identified
100	DF-2	1,000 gal	UST	Not identified
	DF-2	3,000 gal	UST	

Table 3.2.13
Significant Material Inventory
Drainage Area 13

Location/ Facility No.	Significant Material	Quantity Stored	Method of Storage	Material Management Practice

No Significant Material Inventory at Drainage Area 13

Table 3.2.14
Significant Material Inventory
Drainage Area 14

Location/ Facility No.	Significant Material	Quantity Stored	Method of Storage	Material Management Practice
Pad 8 Chem	Waste petroleum with trichloroethylene Hydraulic oil Lube oil 140-Solvent	100 gal 440 gal 55 gal 55 gal	55-gal drums 55-gal drums 55-gal drums 55-gal drums	Materials are stored in a roofed bermed storage area.
Pad 8 Serv.	Lube oil Mogas JP-4 DF-2	440 gal unknown unknown unknown	55-gal drums UST UST UST	Not identified
Pad 9	Paint	unknown	unknown	Stored in storage shed with diked floor.
	Thinner	55 gal	55-gal drum	Stored in storage shed with diked floor.
19	DF-2	200 gal	AST	Tank has duble contained walls and an overfill monitor.
27		1,000 gal	AST	Not identified
36	Diesel	1,000 gal	UST	Not identified
39	Diesel	1,000 gal	AST	Tank enclosed in 2-ft dike.
	JP-4	300,000 gal	UST	Not identified
43	DF-2	3,000 gal	UST	Not identified
45	JP-4 purge	56,000 gal	(4) ASTs	ASTs surrounded by 2-foot dike which drains to IWTP.
	Waste JP-4	200 gal	Fuel bowser	Not identified
	JP-4	2,400 gal	Fuel recovery units, drums	Fuel recovery units enclosed in bermed area.
	Diesel	unknown	Generator	Generator is roofed.
48	Waste oil/water	unknown	OWS	Not identified
50	Toluene MEK Paint	60 gal 660 gal 220 gal	10-gal cans 55-gal drums 55-gal drums	Materials are stored in roofed, bermed chemical site; chemical site drains to holding tank.
54	Inds. waste water-solvents and paint waste-lead	825 gal	55-gal drums	Area around industrial waste water filter is bermed with drainage to IWTP.
58	Gasoline	75 gal	AST	Not identified

Table 3.2.14 (Continued)
Significant Material Inventory
Drainage Area 14

Location/ Facility No.	Significant Material	Quantity Stored	Method of Storage	Material Management Practice
89	Thinner Polythinner Toluene MEK Paint waste	110 gal 110 gal 660 gal 220 gal 220 gal	55-gal drums 55-gal drums 55-gal drums 55-gal drums 55-gal drums	All materials are stored in sealed drums in outdoor, roofed chemical storage area; chemical storage area is surrounded by 4" berm.
95	DF-2	1,000 gal	AST	AST is surrounded by a 1-foot dike.
131	Hydraulic oil Engine oil JP-4 AFFF	unknown unknown unknown unknown	55-gal drums 55-gal drums Fuel cart Tanks	Tanks and drums are stored inside building.
	Trichloroethylene	unknown	55-gal drums	Historically stored at facility.
137	Corrosive Paint	unknown unknown	55-gal drums drums	Materials are stored in outdoor storage shed.
	Alodine	unknown	55-gal drums	Material is stored in building.
198	JP-4	unknown	UST	UST loading and unloading area is bermed.
	Lube oil	55 gal	55-gal drum	55 gal drum is on roofed rack with drip pan.
204	JP-4 purge	unknown	55-gal drums	Storm drains are blocked during refueling and defueling.
210	DF-2	2,000 gal	UST	Not identified
214	DF-2	5,000 gal	UST	Not identified
245	Diesel	300 gal	UST	Not identified

Table 3.2.15
Significant Material Inventory
Drainage Area 15

Location/ Facility No.	Significant Material	Quantity Stored	Method of Storage	Material Management Practice
2070	JP-4	300,000 gal	USTs	
	Diesel	2,000 gal	AST	AST is surrounded by a 2-ft dike.
2072	JP-4	300,000 gal	UST	
	Diesel	2,000 gal	AST	AST is surrounded by a 2-ft dike.
2080	Waste aerosol cans	110 gal	55-gal drums	All materials are stored in sealed drums in outdoor, roofed chemical storage area; all materials are in secondary containment.
	Lube oil	220 gal	55-gal drums	
	Paper/paint waste	110 gal	55-gal drums	
	Sealant	55 gal	55-gal drum	
	Tarred phenol	55 gal	55-gal drum	
	Paint	40 gal	1-gal buckets	
	Citriclean (soap)	1045 gal	55-gal drums	
2082	Lube oil	220 gal	55-gal drums	All materials are stored in sealed drums in outdoor, roofed chemical storage area; all materials are in secondary containment.
	Anti-freeze	20 gal	Unknown	
	Petrol-fuel	200 gal	Fuel cart	
	Oil-soaked rags	165 gal	Rags in drums	
	Paint	50 gal	5-gal containers	Storage locker with no secondary containment.

Table 3.2.16
Significant Material Inventory
Drainage Area 16

Location/ Facility No.	Significant Material	Quantity Stored	Method of Storage	Material Management Practice
2078	DF-2	550 gal	UST	Not identified
2079	Lube oil & hydraulic fluid	100 gal	10-gal drums	Materials are temporarily stored in outdoor storage shed.
2083	Mogas JP-4 Diesel DF-2	2,000 gal 2,000 gal 2,000 gal 10,000 gal	AST AST AST AST	ASTs are surrounded by 2-foot dike with drainage to OWS.

Table 3.2.17
Significant Material Inventory
Drainage Area 17

Location/ Facility No.	Significant Material	Quantity Stored	Method of Storage	Material Management Practice
14	DF-2	750 gal	AST	Tank has double contained walls and an overfill monitor.
2059	DF-2	3,000 gal	UST	Not identified
61	DF-2	500 gal	AST	AST has double contained walls and has overfill monitor; surrounding area is flat.
2075	Diesel	550 gal	UST	Not identified
	Hydraulic fluid	unknown	Equipment	Equipment is storage area has roof and concrete floor.
2076	Diesel	6,000 gal	UST	Not identified
	Paint waste (lead)	220 gal	Drums	Drums are sealed; paint waste is present as a result of floor resurfacing and is temporarly stored onsite.

Table 3.2.18
Significant Material Inventory
Drainage Area 18

Location/ Facility No.	Significant Material	Quantity Stored	Method of Storage	Material Management Practice

No Significant Material Inventory at Drainage Area 18

3.3 SPILL/LEAK HISTORY

Spill/Leak reports provided by RAFB dating back to 1991 were reviewed and information was compiled to determine the number and locations of significant spills or leaks of materials potentially affecting storm water discharge.

Information regarding each identified spill/leak is presented in Table 3.3.1 and describes:

- location of the spill/leak;
- date of occurrence;
- type of material spilled/leaked;
- quantity of material spilled/leaked; and
- method of cleanup.

The following criteria were used to select the spills and leaks to present in the table:

- several spills/leaks in the same area;
- spills greater than 100 gallons of fuel;
- spills greater than 5 gallons of a chemical; and
- spill or leak that reached surface water.

The approximate location of each spill identified in Table 3.3.1 is depicted on the drainage area maps included in Appendix D.

TABLE 3.3.1
SIGNIFICANT SPILLS AND LEAKS POTENTIALLY IMPACTING STORMWATER RUNOFF--1991 THROUGH 1993
ROBINS AFB, WARNER ROBINS, GEORIGA

Drainage Area No.	Location/ Facility No.	Date	Description				Cleanup Response/ Comments
			Leak (L) Spill (S)	Type of Material	Quantity	Source/Reason	
1	1407	4/12/93	S	Diesel Fuel	200 gal	Generator AST, float valve stuck in open position.	Not identified
	DRMO 1601	1/28/93	S	Mercury	10-15 lbs	Broken Manometer in Aisle 25	Cleaned up with sulfur & vacuumed; equipment removed prior to Hg removal; Not all recovered, found in cracks of asphalt.
		1/26/93	S	Mercury	0.41 lbs	Broken Manometer in Aisle 2	Cleaned up with sulfur & vacuumed; Spill Response Team lacked Hg cleanup equipment.
		2/14/92	L	Mineral Oil	60 gal	Large transformer leak	Dry absorbent/drain transformer prior to ship.
		10/29/91	S	TCA & PD 680 MixWaste Solvent	15 gal	Not identified	Dry absorbent, containerized in 85 gal overpack drum.
4	282	10/19/92	L	Ethylene Glycol	5 gal	55 gal drum leaked, unknown reason (storage yd)	Boom pads for cleanup.
	340	3/22/93	S	Nitric Acid	1 qt	Not identified	Neutralized w/sodium bicarbonate, residue to 85 gal overpack.
		3/17/93	L	Sulfuric Acid	31 gal	31 gal out of 220 gal leaked. Mfg called re: packaging.	Neutralized w/soda, repack to 85 gal overpack.
		5/20/92	S	MEK peroxide	15 pts	85 gal overpack drum exploded in warehouse.	Dry absorbent.
	612	10/4/93	L	Industrial Waste	100-300gal	Industrial waste line rupture. Lift station shut off.	Pipeline replaced.
		9/30/93	L	Industrial Waste	100-300gal	Lift station shut off	Boom placed to limit run-off. Water pumped to tank for removal by IWTP, soil placed in ditch.
		9/30/93	L	Industrial Waste	100-300gal	Lift station shut off	
		9/29/93	L	Industrial Waste	100-300gal	Lift station shut off	

TABLE 3.3.1 - Continued
SIGNIFICANT SPILLS AND LEAKS POTENTIALLY IMPACTING STORMWATER RUNOFF--1991 THROUGH 1993
ROBINS AFB, WARNER ROBINS, GEORIGA

Drainage Area No.	Location/ Facility No.	Date	Description				Cleanup Response/ Comments
			Leak (L) Spill (S)	Type of Material	Quantity	Source/Reason	
4 Cont'd	641	9/17/91	L	Industrial Waste	250 gal	IWTP line broke (front) pH 7.4, Cr 0.3 ppm	No cleanup; Repaired line.
	645	10/28/91	L	Industrial Waste	1000 gal	Broken transit line	No cleanup, Cr low, Cu low.
	646	2/28/91	L	Industrial Waste	250 gal	Not identified	Soaked in ground, storm drain.
	647	10/29/91	L	Industrial Waste	1000 gal	Backflow from IWTP.	Clean up sump pump, replace line, sample leachate.
6	226	5/20/91	L	PCB	4oz	Capacitor leaking on roof	Sampling & cleanup.
7	171	4/14/91	S	Solvent 140	20-30 gal	Forklift punctured drum at Chemical Site #4.	Dry absorbent; Failed to call.
	180	7/7/92	L	Methylene Chloride	2000 gal	Broken floor drain trap. May have existed for 6 months.	No cleanup.
	196	4/12/92	L	JPTS	50-100 gal	Sight gauge broke	Remove soil for aeration.
	309	12/6/91	L	Industrial Waste	20 gal	Broken IWTP line. Contractor broke line.	Not identified
9	110	6/8/93	L	AFFF Foam	350 gal	Lightning caused pumps to activate, sprinkler room.	None
		10/18/92	S	AFFF Foam	100 gal	Foam released, dispersed to lagoon.	C141 Sect to cleanup.
	125	7/18/92	L	Alodine	1-3 gal	Washed off aircraft, unauthorized wash station.	Vacuum, Dry absorbent.
		9/9/91	S	JP-4	10 gal	Inside aircraft, improper procedure in draining aircraft.	Dry absorbent.
		6/4/91	S	Hexamethylene Disocyanate	1-2 gal	Not identified	Dry absorbent.

TABLE 3.3.1 - Continued
SIGNIFICANT SPILLS AND LEAKS POTENTIALLY IMPACTING STORMWATER RUNOFF--1991 THROUGH 1993
ROBINS AFB, WARNER ROBINS, GEORIGA

Drainage Area No.	Location/ Facility No.	Date	Description				Cleanup Response/ Comments
			Leak (L) Spill (S)	Type of Material	Quantity	Source/Reason	
9 Cont'd	**142**	11/2/93	L	Sodium Cyanide based stripper	30 gal	Stack	Not identified
		5/7/92	L	Chromic Acid	130 gal	Residue leak from 4" line. Contractor failure.	To approved landfill.
		9/30/91	L	Chromic Acid	30 gal	Leak in tank in basement.	Flushed to IWTP.
	147	7/5/91	L	Industrial Waste	100 gal	Two pumps failed	Flushed to storm drain.
	149	9/3/93	L	Industrial Waste	150 gal	Line cut by lawn mower (E).	Not identified
14	**37**	11/28/92	S	Purge Fluid	350 gal	Not identified	All recovered
	50	10/8/91	S	AFFF Foam	200 gal	Foam suppression unit	Contained, disposed of in SNMU-Bldg 131.
	54	10/6/91	L	IWTP Meth/CL	2000 gal	Broken IWTP line on SE end.	Pump liquid, remove & containerize soil.
	89	12/1/92	L	Industrial Waste	200 gal	IWTP/Sewage lines broke.	Waste water vacuumed.
	203	6/12/91	L	Purge Fluid	350 gal	Changing valve pit #1.	Soil-overpack drum to B181. Vacuumed; 340 gal recovered.
		5/30/91	L	Purge Fluid	20 gal	Leak at site gauge attachment.	To oil/water separator.
		1/8/91	L	Purge Fluid	100 gal	Release oil/water seperator, bearing missing from pump.	Waste to IWTP.
OTHER	**SAC Area-Aircraft**						
	C141 P1 660146	9/18/92	L	JP-4	800 gal	Aircraft started venting, 140,000 lbs fuel on board.	Dry absorbent

SECTION 4
BEST MANAGEMENT PRACTICES IDENTIFICATION

4.1 EXISTING BMPs ASSOCIATED WITH INDUSTRIAL ACTIVITY

Best Management Practices (BMPs) are a broad class of measures, prescribed by the EPA, used to prevent or mitigate pollution entering surface water, air, land, and groundwater. Most BMPs involve good management and common sense, while others are complicated and require activity-specific controls or practices. BMPs can be categorized as structural (i.e., consisting of constructed facilities, such as detention basins, sewer systems, etc.) or nonstructural (i.e., consisting of practices, procedures, regulations, etc.). Whenever possible, nonstructural BMPs are implemented first, with structural BMPs implemented when nonstructural measures fail to achieve the desired results. Basic nonstructural BMPs must be included in a facility's storm water pollution prevention program. These include:

- good housekeeping;
- preventive maintenance;
- visual inspections;
- spill prevention and response;
- sediment and erosion control;
- employee training; and
- record keeping and reporting.

These baseline BMPs serve as a guideline for selection of more detailed BMPs that are tailored to a specific pollution source.

RAFB presently conducts an annual Environmental Compliance Assessment and Management Plan (ECAMP) inspection to assess environmental compliance. Findings of areas of concern noted during the ECAMP inspection are documented and reported to the supervisor of the specific operation.

Three formal categories denote the severity of the areas of concern. These are:

- Significant Finding - A problem that requires immediate action. It poses, or has a high likelihood of posing, a direct and immediate threat to the environment.
- Major Finding - Major findings can pose a future threat to the environment. These problems require action, but not necessarily immediately. This category could result in a Notice of Violation (NOV) from a regulatory agency.

- Minor findings - These findings are generally administrative in nature. They can also involve temporary or occasional instances of noncompliance.

A final category of findings is called Environmental Practice Issues (EPI). These findings are not based on environmental regulations and do not involve noncompliance. Instead, they are management practices that will aid RAFB to comply with regulations. The evaluator can include recommendations for reducing environmental risks and improving environmental management practices and suggest areas requiring additional study. EPIs are called Management Practices and are used to help the organizations in recognizing and developing BMPs for their specific operations.

4.1.1 Practices At Industrial Sites

4.1.1.1 Shop Operations

1. Plating shops - Two plating shop operations, Buildings 142 and 640, were investigated as part of the field effort for the RAFB SWPPP. Material management practices at these operations include:
   - segregation of chemicals stored inside the buildings;
   - bulk chemicals off-loaded under roofed areas;
   - informal daily and formal weekly facility inspections (performed by the Quality Control Section in Bldg. 142);
   - informal daily tank and valve inspections;
   - maintenance on an "as needed" basis;
   - daily monitoring of plating tank material levels;
   - secondary containment for outdoor ASTs; and
   - training of personnel in handling of materials and spill response.
2. Aircraft Fueling/Defueling Operations - Aircraft fueling/defueling operations take place on the aircraft parking aprons. Aircraft are fueled either through the hydrant system or from refueling vehicles. There are several areas along the ramp where these operations take place. Management practices conform to requirements of the Air Force POL storage dispensing system inspection and surveillance program. Small spills are absorbed with a dry absorbent and properly disposed. Daily inspection records are maintained.
3. Vehicle Maintenance - Vehicle maintenance shops are either government or contractor operated; therefore, management practices are generally at the discretion of the responsible organization. Management practices include:
   - drip pans placed under bulk material dispensers;
   - daily inspections;
   - spill absorption materials readily available; and
   - training of personnel in proper handling of materials and spill response.

4. Painting Operations - Paint stripping and repainting are extensive during the maintenance of JC-130s and C-141s. Complete repainting of aircraft exteriors is accomplished in Buildings 89 and 50. Stripping is done in Buildings 50 and 54. Most stripping activities currently use methylene chloride and plastic bead blasting.

   Painting operations are conducted at 18 shops in addition to Building 89; ten of the additional paint shops are part of the WR-ALC/TI Directorate, and the remaining eight are operated by other organizations, such as the 19th Air Refueling Wing (ARW).

   The TI Directorate shops also conduct paint stripping operations. Many aircraft parts are stripped in Building 180. C-130 propellers are stripped in Building 140.

   Management practices include:

   - storage of new and waste materials inside or within contained areas;
   - maintenance of daily inspection records; and
   - training of personnel in proper material handling and spill response.

5. Power Production - Power Production maintains emergency generators, provides antifreeze, and changes oil. The emergency generators include emergency power systems for fire pumps and well pumps. Maintenance records are maintained for each piece of equipment. Each shop maintains a daily operating log for each individual piece of equipment. Inspections are biweekly and monthly. Operations, maintenance and inspections are performed according to AFR-91-4, Real Property Operations and Maintenance (diesel and fuel-powered).

6. Oil/Water Separators (OWS) - Each facility manager is responsible for the OWS that services their facility. Facility managers are required to perform weekly inspections. However, there are no standard operating procedures (SOP) for these inspections nor are any inspection reports maintained.

   Once the level of oil reaches 1/2-inch from the top, the OWS is pumped out. This service is provided by Base Utilities (CE). Additional maintenance is the responsibility of the facility manager, e.g., removal of sediments from the OWS. This maintenance activity is provided by the facility personnel or contracted.

4.1.1.2 Storm Water Collection and Discharge

RAFB has an extensive storm water collection system to handle storm water received during periods of heavy rainfall. Most storm water runoff drains eastward because of natural topographic relief in the area. Typical storm water flows range up to 2.6 mgd and come from many component sources.

Six permitted outfalls numbered 001 through 006 were constructed based on surface runoff patterns on the Base, with consideration given to the presence of existing storm sewers. These outfalls consist of a system of open drainage swales and underground

sewers and discharge to wetlands and Horse Creek. During rain events, storm water runoff from industrial and developed portions of the Base is collected by inlets in paved areas and roadways. Runoff from the unpaved areas is generally routed into open drainage channels.

Uncontaminated process cooling waters, irrigation waters, OWS discharges, and various other non-storm waters are discharged to the storm water but account for only a small fraction of the total flow.

Permitted storm water outfalls are sampled at a frequency of once per month for oil and grease content and biochemical oxygen demand. In addition, storm water outfalls not described in current NPDES permits were identified. These outfalls will be permitted under the State of Georgia General Permit and monitoring will reflect General Permit requirements.

Retention basins exist within the storm water network upstream of each of the six permitted outfalls. Gates within the basins can be closed to provide temporary detention of flow for spill containment. Spill containment is also achieved by a series of weirs constructed across surface streams and storm ditches that control the storm water discharge. Eight readily accessible spill containment areas have been identified on the Base to intercept wastewaters that are inadvertently released to the storm water system before discharge to off-Base natural waterways. However, unreported or uncontained spills can potentially reach Horse Creek and associated wetlands. Site specific spill contingency plans for individual industrial shops have been developed to optimize spill recovery and response.

4.1.1.3 Disposal of Other Wastes

Nonhazardous solid waste at RAFB consists of collection and removal of general refuse, construction debris, and domestic waste from the military housing. Recycling programs for glass, newspaper, and aluminum have been implemented to minimize the volume of waste transported to landfills and has resulted in a 20 percent reduction in volume of these items. The waste hauling and recycling services are subcontracted by the Base to independent private contractors. The nonhazardous refuse generated on-Base is accumulated in solid waste receptacles ranging in size from 4 to 40 cubic yards. The Houston County Landfill is currently used for ultimate disposal of these wastes.

The frequency of pickup for both recyclables and general refuse is negotiated with the individual contractors. Periodic inspections of trash receptacles are conducted to identify candidates for replacement and verify that no hazardous wastes are deposited. Easily identifiable receptacles dedicated for recyclable materials such as wood, cardboard, paint cans, glass, and metals have been located throughout the Base.

Many hazardous solid and liquid wastes are generated that require special disposal. These wastes include spent solvents, contaminated fuels, plating wastes, asbestos, radioactive wastes, and a variety of other industrial process wastes. Medical and pathological hospital wastes are collected independently of other hazardous materials.

These wastes are placed in red bags, autoclaved, and stored in a secured location by the hospital while awaiting pickup and disposal.

Seventeen approved short-term accumulation points within the Base are designated for temporary storage of hazardous drummed materials. Approximately 3,500 liquid-filled drums and 500 solid-filled drums are generated by Base activities each year. Liquid wastes are either brought directly to the appropriate IWTP or to the nearest accumulation point depending on volume and wastestream consistency. Solid wastes are typically brought directly to the accumulation points. Samples are collected by Base laboratory personnel for analysis. The drums remain at the accumulation points pending the outcome of the sampling. Determinations are subsequently made regarding recycle, sale, or disposal as hazardous waste. Meanwhile, the wastes are transferred to the DRMO facility which maintains a RCRA Part B permit for storage.

As previously stated, industrial wastewater treatment is conducted at two treatment plants. Sludges from the two industrial wastewater systems have been identified as hazardous wastes, designated as F006 and F003. Building 352, used for storage of the sludges generated from both plants, maintains a RCRA Part B storage permit for hazardous wastes. The sludges are dewatered and stored in large piles within the building.

Dioxin-contaminated items are stored on Base indefinitely under a hazardous waste storage RCRA Part B permit. There, materials are containerized before storage and consist of rinse liquids, scrap materials, and miscellaneous solids. These materials are to be stored inside the dioxin storage facility until a RCRA-permitted dioxin destruction process becomes available.

4.1.2 Practices at Material Storage and Dispensing Areas

4.1.2.1 Petroleum, Oils and Lubricants (POL)

RAFB has the storage capacity for over 12 million gallons of petroleum, oils, and lubricants (POL). The POL program at RAFB manages the following materials:

- JP-4 (jet fuel);
- DF-2 (diesel fuel);
- unleaded gasoline;
- heating oil;
- hydraulic oil; and
- lubricating oils.

The POL program also maintains USTs, ASTs and pipelines. The annual requirement for gasoline on the Base is approximately 700,000 gallons. The Base service station has five 10,000-gallon gasoline USTs.

The main POL storage facility is located in Drainage Area 7. This area has 12 ASTs; each tank has secondary containment (a dike) large enough to retain the full contents of the tank in case of a rupture. The total JP-4 capacity in this POL area is approximately 9,700,000 gallons. Also, at the main POL storage facility is a diesel fuel tank that stores 1,000,000 gallons and can be piped to a 240,000-gallon fuel tank servicing the Base's largest heating facility at Building 177. Four 25,000-gallon ASTs have single diked areas at the main POL area. A 20,000-gallon UST for gasoline (distributed by tanker truck) is scheduled for removal.

JP-4 is delivered to the POL facility by an underground pipeline from an off-Base supplier. JP-4 is distributed to aircraft by hydrants or refuelers. Some hydrants are supplied by underground pipeline. Diesel fuel and gasoline are delivered by tanker trucks to off-load piping in the POL area. On the east side of the runway, two sets of 50,000-gallon USTs and three additional 50,000-gallon USTs (Facility 39 pump house) service the 19th Air Refueling Wing (ARW). Trucks for gasoline and diesel fuel are filled at the POL area for ground service of the 19 ARW.

Currently, there are 72 regulated tanks and 35 heating oil tanks (which are exempt from regulatory requirements) at RAFB. The Base has reduced or upgraded its number of regulated tanks by 40 percent since 1985 through removal and replacement with ASTs or new USTs. RAFB is planning to upgrade the remaining USTs by 1995 consistent with Air Force Materiel Command (AFMC) goals. Federal regulations require that tanks be upgraded by 1998.

The Base has complied with the EPA deadlines for the phased schedule of leak detection upgrade requirements. Of 61 USTs that have been upgraded, 41 are steel and 20 are fiberglass reinforced plastic (FRP) with capacities from 250 gallons to 50,000 gallons. The tanks have the following features:

- 47 tanks have leak detection devices;
- 46 tanks have spill catchment basins;
- 29 tanks have overflow mechanical flow restrictors;
- 17 tanks have overfill high level alarms; and
- 11 tanks have new or repaired piping systems.

Leak detection on USTs with a capacity of 550 gallons and less is not required by environmental regulation.

RAFB also has 37 organizational fuel tanks for storing diesel fuel for heating and emergency power. Heating oil USTs in the JSTARS area will be removed with completion of a natural gas line.

WR-ALC/EM has the responsibility for managing petroleum, oils and lubricants with respect to environmental regulations and compliance requirements.

The centralized Base fuels (inspection and maintenance) facilities are maintained by the 653 CES Mechanical Section and Liquids Fuels Unit (DEMNF). DEMNF services aboveground and underground JP-4 tanks, piping, pumps, filters, valves and meters; the diesel fuel facilities in the POL area; and the tanks and delivery equipment at the military service station. Operations and maintenance, including inspections, follow AFR 85-16, "Guidelines for Liquid Fuels".

All systems are inspected weekly and inspections are recorded on AFTO 39, Fuel System Inspection and Discrepancy Record. DEMNF is responsible for correcting any problems identified during these inspections and tracking work orders through a daily computer-generated list.

4.1.2.2 Chemical Staging Areas

RAFB has established procedures for the ordering, dispensing, and tracking hazardous materials. There are 65 storage and/or dispensing areas for chemicals used at RAFB, with the largest variety of materials used in depot maintenance. Building 340 is the Base's largest hazardous materials receiving and storage facility, located in Drainage Area 4. Building 340 has catch basins and holding tanks to contain any large spills inside or outside the building. The 653 SPTG maintains RAFB's long-term hazardous materials storage facility.

A group of RAFB personnel, designated as Hazardous Material Cell (HMC), has been established to purchase only the smallest quantity necessary to meet requirements. HMC participants from Base supply (DSS), Bioenvironmental Engineering (SGB), and Environmental Management (EMP) are co-located to track the identification, requisition, receipt and issue of hazardous material.

Chemical staging areas located throughout the drainage areas of RAFB are concrete-bermed enclosures (the majority have been recently resealed) that are fenced, roofed for rain protection, and have a valved berm outlet. All hazardous material storage is required to have some form of secondary containment structure. All drums on pallets are placed well inside the bermed area to insure that the pallets are not overhanging the berm.

If rainwater accumulates in a bermed area, the water is checked for an oil sheen before releasing it through the drainage valve. In case of a large accumulation of contaminated water, the area is pumped out by IWTP and cleaned with a dry absorbent which is then containerized. The containers are either sent to DRMO or handled by the Spill Response Team. Spills of hazardous waste occurring inside or outside the bermed areas are absorbed with a dry absorbent or contained with other absorbent material, such as a blanket or boom; then the Spill Response Team is notified. These practices minimize the risk of storm water contamination.

RAFB has a RCRA Part B permit for the DRMO and two other long-term storage facilities. The permit contains general conditions and conditions specific to RAFB. A Hazardous Waste Management Plan was made final by the Base in July 1993. The Plan

addresses inspection, training, record management, spill planning, and hazardous waste management requirements; it supplements the requirements included in the RCRA Part B permit.

All chemical staging areas (which contain both hazardous wastes and bulk hazardous materials) are inspected weekly and inspection logs are maintained at each area. EMCC has designated one individual to be responsible for management and operations of all accumulation sites. Each site has one designated primary and alternate POC who is sent to the chemical staging area manager's training course. Each facility manager is responsible for their individual site. Education, training and quarterly compliance inspections are conducted by EMCC staff.

Most of the chemical sites visited have posted site-specific spill response procedures and maintain an adequate supply of spill response and personal protective equipment. A Spill Response Team consisting of WR-ALC/DS, EM, 19th ARW, and 653 CES/CE personnel have been trained according to Federal regulations.

4.1.2.3 Practices for Hazardous Waste Management

4.1.2.3.1 Waste Generation

Hazardous wastes generated at RAFB include the following:

- flammable solvents;
- paint stripping chemicals;
- plating wastes;
- contaminated fuels and lubricants; and
- large quantities of organic and inorganic liquid and solid wastes generated by a variety of stripping, cleaning, painting, and repair activities.

Base activities generate approximately 3,500 drums of liquid and 400-500 drums of solid hazardous waste per year. Most of these wastes are generated by maintenance operations on C-141, C-130, KC-135 and F-15 aircraft. Remaining wastes are generated by tenant and Base support groups including the 653 SPTG and 5 CCG.

4.1.2.3.2 Accumulation/Storage

Seventeen "accumulation sites" are currently approved by EMC as designated, less-than-90-day accumulation points for hazardous wastes. Shop-generated wastes are collected and removed to the nearest assigned accumulation point. Other liquid wastes, generated by plating and large-scale stripping/painting operations, are collected and discharged directly to the IWTP.

4.1.2.3.3 Disposal

A system is in place to monitor and properly dispose wastes collected at each of the accumulation points. Between Day 55 and Day 60 of waste accumulation, EM's Central Waste Management Facility collects the drums. One drum from each waste source is sampled and submitted to the Science and Engineering Laboratory for analysis. Results are returned to the Central Waste Management Facility showing the concentration of major toxic constituents. The lab report is used to generate a DD Form 1348 Disposal Turn-In Document (DTID). Drums from consistent waste streams are assigned an established waste profile and prepared for disposal. Depending upon the waste constituents, a decision is made whether to recycle, sell, e.g., as waste oil, or dispose of as hazardous waste.

Approximately 15-20 percent of the drummed hazardous waste is recycled for use on the Base. The remaining waste is transported by the EMC's Central Waste Management Facility to the DRMO for sale or disposal by a hazardous waste contractor. Central Waste Management Facility performs an inspection of each drum before transport to DRMO. EM certifies each drum. This ensures that the waste container, label, and DTID are correct and that wastes are properly coded.

Wastes disposed by the DRMO by hazardous waste disposal contractors are manifested using EPA Uniform Hazardous Waste Manifest forms. Signed forms, signifying receipt of the hazardous waste by the RCRA-licensed treatment, storage, and disposal (TSD) facility are returned to the DRMO. Certificates of Disposal, however, are sent to the Regional Contract Office Headquarters in Battle Creek, Michigan.

4.1.3 Practices in Areas With Potential Surface Contamination

4.1.3.1 Airfields and Aprons

There are several potential sources of storm water contamination that are associated with operations and maintenance activities conducted on the runways and aprons. The primary concerns stem from fuel handling. Aircraft fuel, JP-4, is unavoidably transferred, loaded, unloaded, and stored in proximity to storm drains. Spill contingency plans have been developed to optimize spill recovery and response time.

Depending on the aircraft, fueling is conducted using pressurized hydrant systems located in designated fueling areas along the flightline or directly from 6,000-gallon capacity fueling trucks. The JP-4 fuel hydrants are located in the ARW area along the eastern edge of the runway. The hydrant system is connected to an underground pipe network originating at the POL facility. An 8-inch diameter pipeline from Facility 196 also serves refueling hydrants located along the northwest side of the North Operations Apron. Leaks or spills in the fuel distribution system could be discharged to Horse Creek and associated wetlands either through the storm sewers or from leakage into the groundwater. Interception of inadvertent releases is provided by weirs and spill containment areas. Spills on the airfield surface are readily observed and contained.

Preventive maintenance of the pipeline and fixtures is conducted by inspections, pressure checks, and treatment with corrosion inhibitors.

Defueling processes are also conducted on the runways and aprons. Underground tanks are used for temporary storage of unusable fuels pending collection and shipment to the DRMO for final disposal. Leak response and prevention are similar to those described for fueling operations.

Nonfuel related contaminant sources also exist on the airfields and aprons. Aircraft washrack wastewater is diverted directly to the industrial wastewater treatment system. Overflows could potentially reach storm drains, if not contained. Most of the deicing compounds volatilize before reaching sewer inlets. Small quantities of hydraulic fluids are washed into the sewer system if not absorbed.

4.1.3.2 Installation and Restoration Program Sites

4.1.3.2.1 Overview

RAFB has 33 IRP sites with two sites on the National Priorities List (NPL). There are currently twelve personnel in the Restoration Division of the Environmental Management Directorate (EMR) and seven HAZWRAP contractor personnel that directly support the IRP at RAFB. EMR is aggressively pursuing completion of IRP sites; 20 sites are scheduled to be finished by the end of FY93.

4.1.3.2.2 Control Measures

Action control strategies at the IRP sites include:

- construction of runon control to divert storm water around landfills;
- construction of multilayer caps and cover renovation; and
- removal of buried waste material and soils to reduce contaminant sources.

4.1.3.3 Pesticide Management

4.1.3.3.1 Management Activities

The pesticide management activities at RAFB consist of the application of insecticides, herbicides, and rodenticides to control turf and ornamental pests, structural pests, disease vectors, and pests of public health importance.

4.1.3.3.2 Storage

Base pesticides are stored at the 653 CES/CEMSE Pest Management Shop, Building 1549, and at the Golf Course Maintenance Facility, Building 596. The 653 CES/CEMSE Pest Management Shop employs 10 workers. Seven of these are certified to apply pesticides. The remaining technicians are supervised by certified personnel. Pesticide applications at the golf course are performed by one certified employee.

Pest management activities are monitored by medical services personnel. This includes physical examinations of personnel who apply pesticides and perform annual shop visits.

4.1.3.3.3 Operations Management

An approved Pest Management Plan identifies Basewide annual requirements. Pesticide usages are entered into the 653 CES/CE Work Information Management System (WIMS), Pesticides Program, which generates a quarterly usage report. Records of inspection and treatments are maintained for each facility on Base.

4.1.4 Spill Prevention and Response

4.1.4.1 Secondary Containment

Containment is the capture of a spill, thus preventing its release to the environment. Secondary containment structures in use at RAFB include dikes, curbs, OWSs, drip pans and collection systems. When such containment of a spill at the spill site is impractical, flow diversion consisting of trenches, drains, graded pavement, gratings, sewers, and culverts are used to direct a spill to a remote secondary containment area where the spill can be detained for sufficient time to be collected or treated. Swales and ditches are typically used for remote secondary containment. When small quantities of floating material are involved, oil booms and weirs with oil baffles, permanently installed in ditches and small waterways, serve as remote secondary containment.

4.1.4.2 Housekeeping

Good housekeeping requirements include neat and orderly storage of all POL and chemicals; prompt and thorough removal of small spills; and disposal of cleanup materials. Maintaining a clean and orderly work environment reduces the possibility of accidental spills caused by misloading of equipment and materials and readily allows the detection of spills and leaks.

4.1.4.3 Material Compatibility

Materials used for storage or transport are compatible with the oil or hazardous material contained within. Compatibilities reduce corrosion and the frequency and extent of spills to the environment. All containers for storage or transportation of chemical materials meet the standards of DOT regulations. Where appropriate, storage containers have protective coatings such as paint, epoxy, plastic, or fiberglass liners. Buried tanks and pipelines meet the requirements of 40 CFR 280, UST technical standards. Incompatible materials are not mixed during storage or placed where there is a high potential for their mixing during a spill event.

4.1.4.4 Security

All facilities handling, processing and storing oil are fully fenced, and entrance gates are locked and/or guarded when the facility is not in production or is unattended. Master

flow and drain valves are securely locked in the closed position when in operating or on-standby status. Pump starter controls are locked in the "off" position or accessible only to authorized personnel during nonoperation or nonstandby periods. Loading and unloading connections of pipelines are securely capped or blank-flanged when not in service or in standby periods; this also applies to pipelines that are emptied by drainage or by inert gas pressure. Adequate facility lighting is provided to ease detection of night-time spills and vandalism.

4.2 PERSONNEL TRAINING

All personnel involved with the management and handling of oil and hazardous materials, as well as emergency response to releases, take part in periodic, required training programs. The training programs consist of formal training and specific on-the-job training. The training is the responsibility of the 653 CES/DE and meets the requirements specified in 29 CFR 1910.120 and AFR 355-1. Those assisting with the training include the SGB and fire department. The 653 CES identifies and provides certified trainers.

Supervisors and workers who use or transport hazardous material also receive training required by AFOSH Std. 161-21, AFR 127-12 and WR-ALC Plan 19-2, HAZMAT Emergency Materials and Response Plan.

The training programs include the following features:

- health effects of exposure to oil and hazardous materials;
- applicable first aid procedures;
- personal protective equipment, requirements, and procedures;
- spill evaluation procedures;
- combustibility of spill material and potential for flashback along vapor trails;
- applicable fire fighting procedures and special hazards of combustible products;
- reactivity of spill material with common materials, e.g., mixing with water;
- use and maintenance of alarms and monitoring equipment associated with spill prevention or response;
- initial notification procedures described in the SPCC;
- location of posted Site-Specific Contingency Plans, if applicable;
- immediate spill response actions including the location of pump controls and valves to stop spill flows, and the location and use of fire extinguisher, sorbents, neutralizing agents, and other immediate spill response procedures, as appropriate;
- the many aspects of visual inspections associated with the particular area, development and use of inspection checklists and record maintenance; and

- the purpose and requirements of good housekeeping.

The initial OSHA training for Base personnel engaged in hazardous material removal or other activities which potentially expose personnel to hazardous materials and health hazards is 40 hours of classroom instruction with a minimum of three days of field training. All personnel who respond to a hazardous material release, but are unlikely to need respiratory protection, receive 24 hours of classroom instruction with one day of field training. All personnel who work at or near where oil or hazardous materials are used or stored are trained to the OSHA First Responder Awareness Level. Eight hours of annual refresher OSHA training is provided after the initial training.

Training for emergency spill response is based on the duties and function performed by each responder of the emergency response organization. The spill response team members who participate, or are expected to participate in emergency spill response, are given training according to the following training levels:

Level 1 Training - First Responder Awareness Level

First responders at the awareness level are individuals who are likely to witness or discover a hazardous substance release and have been trained to initiate an emergency response sequence by notifying the proper authorities of the release. They take no further action beyond notifying the authorities of the release.

Source of training: Initial training provided by Disaster Preparedness (Newcomers Brief), Environmental Health (Newcomers Brief), and by first level supervisors (Hazardous Communications training).

Level 2 Training - First Responder Operations Level

First responders at the operations level are individuals who respond to releases of hazardous substances to protect nearby persons, property, or the environment. They are trained to respond in a defensive fashion without actually trying to stop the release. Their function is to contain the release from a safe distance, keep it from spreading, and prevent exposures.

Source of training: Disaster Preparedness' Disaster Control Group Training Course or the Air Training Command's On-Scene Commander's Course.

Level 3 Training - Hazardous Materials Technician

Hazardous materials technicians are individuals who respond to releases to stop the release. They assume a more aggressive role than a first responder at the operations level in that they will approach the point of release to plug, patch, or otherwise stop the release of a hazardous substance.

Source of training: The Hazardous Materials Contingency Planning (HMCP) Team, a working group under the Base's Environmental Protection Committee, coordinates training requirements for this level.

Level 4 Training - Hazardous Materials Specialist

Hazardous materials specialists are individuals who respond with and provide support to hazardous materials technicians. Their duties parallel those of the hazardous materials technician; however, their duties require more directed or specific knowledge of the various substances that they may be called upon to contain.

Source of training: Same as Level 3 above.

Level 5 Training - On Scene Incident Commander

Incident commanders, who assume control of the incident scene beyond the first responder awareness level, receive at least 24 hours of training equal to the first responder operations level.

Source of training: Air Training Command formal training course used for this level is IAW AFR 355-1. Other courses may be used by the Fire Department.

Level 6 Training - Post Emergency Response Operations

This level of training applies to personnel assigned to cleanup. All units that store, transport, create, or use hazardous materials and respond to hazardous materials releases meet these training requirements.

Source of training: Air Training Command formal training courses are used. The HMCP team coordinates training request with WR-ALC/EM.

Training Programs

Training programs are conducted annually, or as required for certain personnel. Records of the type, extent, and frequency of each employee's training are maintained until closure of the applicable area or until three years after the date the employee last worked. Newcomers to the Base are immediately informed of the general spill response and reporting procedures by including a procedural outline in each newcomer sponsor package.

Detailed training is specifically structured for each response organization and addresses the following:

- responsibilities of the individual organization being trained;
- recognition and nature of chemical hazards, e.g. MSDS information;
- safe handling procedures;
- detailed response procedures, including chain of command, to be followed in case of a spill;
- location and use of spill response equipment;
- potential health and fire hazards associated with spill response activities;

- first aid measures;
- regulatory requirements and their purpose; and
- "dry run" field exercises, including cross training of the various units.

Training programs in conformance with OSHA's Hazardous Waste Operations and Emergency Response Regulations are conducted:

- once per year for all personnel working at oil and hazardous material sites;
- within six months (two weeks recommended) for all personnel starting a supervised position;
- before starting work for personnel entering an unsupervised position;
- after any significant revisions to the training program; and
- after a spill response in which training deficiencies were noted.

Contractors working in areas associated with oils or hazardous materials are responsible for training their personnel in spill response and reporting procedures. The contract administrator for the Air Force is responsible for providing these contractors with a summary of spill response and reporting procedures.

Training records are maintained using AF Form 55, Employee Safety and Health Record, AF Form 797, Job Qualification Standard Continuation Command (JQs), or AF Form 1098, Special Task Certification and Recurring Training. Tracking, scheduling, and documenting workplace safety training is a supervisory responsibility. Training for civilians is documented according to the AFR 40-410 regulation. Copies of Training and Development certificates given to students who complete training are kept permanently in the training records.

4.3 FACILITY INSPECTIONS

Visual inspection consists of touring or patrolling the oil and hazardous material storage and transfer sites to detect leaks, evidence of spills, or other conditions that could result in a spill; routine inspections of secondary containment facilities, and storage and transfer areas; and the annual detailed inspection performed by WR-ALC/EM. In particular, the following organizations perform the routine inspections as indicated below:

- Base Supply: The Fuels Management Branch is responsible for the daily inspection of fuel quantities. These daily inspections are conducted to determine:
  - unaccountable fuel loss;
  - evidence of tampering with critical equipment that could lead to a spill; and
  - deteriorated or damaged equipment needing repair or replacement.

This inspection and surveillance program is conducted following LGSF Operating Instruction 144-1 (on AFTO Form 39).

- Security Police: The Security Police are responsible for making a visual inspection of all petroleum storage and pumping facilities as well as Base drainage channels during their regular patrols. These inspections are made during both duty and non-duty hours to detect an oil or other hazardous material spill. These inspections are conducted according to Security O.I. 125-4. Before authorizing entry to the Base, vehicles containing POL and hazardous substances are inspected. The Security Police also ensure that the driver or the contractor is instructed concerning spill prevention instructions and procedures.

- Civil Engineering: During maintenance, Civil Engineering personnel visually inspect related organizational equipment not managed through DEMNF to determine if there are significant signs of malfunction, damage, or deterioration that would contribute to a discharge of oil or other hazardous material.

  The annual tank/container inspection includes inspection for:

  - leaks;
  - tank or drum corrosion;
  - deterioration of secondary containment;
  - closure of containment drain valves;
  - good housekeeping; and
  - condition of seams, rivets, nozzle connections, valves, and pipelines.

All inspection records are maintained on an AF "Conventional Fuel System Component and Tank Cleaning Summary."

4.4 PREVENTIVE MAINTENANCE

The preventive maintenance program involves the periodic lubrication, adjustment, and replacement of worn parts in all equipment, for example pump bearings and engine parts, where equipment failure could result in a spill of oils or hazardous materials that impede response efforts. The program includes:

- periodic testing of equipment for integrity;
- calibration of monitoring equipment;
- periodic adjustment, cleaning, lubrication and repair or replacement of parts and equipment as recommended by the manufacturer or required by good maintenance practices;
- tagging equipment that should not be operated because of ongoing maintenance activities or because it is inoperable; and
- coating of storage tanks, pipes and associated equipment to avoid failure due to corrosion.

SECTION 5
STORM WATER CONTAMINATION RISK IDENTIFICATION

5.1 PURPOSE

The purpose of storm water contamination risk identification is to identify facilities at RAFB that warrant further action with respect to the potential to affect storm water. The criteria used to determine whether a facility has the potential for storm water pollution are the following:

- housekeeping practices;
- frequency of inspections;
- preventive maintenance procedures;
- spill prevention and containment measures; and
- spill history.

Facilities at the Base were investigated for adherence to the standard practices in the above areas as set forth in the "NPDES General Permit for Storm Water Discharges Associated with Industrial Activity" published by the State of Georgia, Department of Natural Resources, Environmental Protection Division, effective on June 14, 1993.

5.2 METHODOLOGY

Before starting the field reconnaissance phase for the risk identification, background materials and reports from investigations previously conducted at the Base were reviewed to identify areas to be surveyed during the field investigation. The current Spill Prevention Control and Countermeasures (SPCC) plan for RAFB, which contains a comprehensive list of shops and facilities at the Base, was a primary reference for this review effort. Information extracted from the SPCC enabled the field team to assemble a list of buildings, shops, storage areas, USTs, IRP sites, and accumulation points to investigate. Additional entries to this list were accumulated from interviews with Base personnel as the field work progressed.

The field effort began in October 1993 and continued through November 1993. Interviews with site managers, shop foremen or personnel, and Civil Engineering personnel were conducted to obtain an overview of facility operations. Observations were recorded through field notes and photographs. Upon completion of the field effort, all field notes were compiled and reviewed. After review of the field notes and criteria stated above in Section 5.1, each facility was assessed for its potential to contaminate storm water.

5.3 RISK DATA

Information related to the risk of storm water contamination from each facility visited during the field reconnaissance is presented in Table 5.1. The facilities are grouped by drainage area. An explanation of the column headings follows:

Significant/Historical Spill Site: indicates whether a significant spill occurred at the facility from 1991 to 1993 that potentially contributed to contamination of a storm water discharge. If a spill occurred within this period, it is marked with an "X".

Housekeeping: describes the condition of the facility at the time of investigation. A rating of "adequate" means that the site had no evident leaks or spills; chemicals were stored correctly; and the area was orderly. A housekeeping rating of "inadequate" indicates that evidence of spills or leaks and/or improper chemical storage was noted during the investigation.

Preventive Maintenance: describes (1) the timely inspection and maintenance of storm water management devices, such as oil/water separators and catch basins, and (2) the testing of facility equipment and systems to prevent failures or breakdowns that could result in contamination of storm water.

Spill Prevention/Containment Measures: describes a facility's existing structural controls to prevent discharges to storm water. Structural controls may include, for example, berms, dikes, or drainage to the industrial waste treatment plant.

Inspections: describes type and frequency of inspection.

Facility of Concern: indicates when marked with an "X" that the facility is a concern as a potential or existing contributor to storm water pollution.

A facility was considered a "facility of concern" if it received a negative risk indication in any of the five categories described previously. For example, based on a housekeeping rating of "inadequate," a facility was considered a concern. The presence of an "X" in this column does not necessarily indicate that a facility is actively contributing to storm water pollution, but rather that it has as a minimum the potential to significantly contribute to storm water pollution. A detailed explanation of concerns for each "facility of concern" is described in the storm water management tables included in Section 6.

TABLE 5.1
Storm Water Contamination Risk Identification
Robins Air Force Base

Drainage Area No.	Location/ Facility No.	Facility Name/ Risk Component	Significant/ Historical Spill Site	Housekeeping (1)	Preventive Maintenance (2)	Spill Prevention/ Containment Measures (3)	Inspections(4)	Facility of Concern
1	1400	Pave Paws Facility	No	n		n	Monthly	No
		Fuel Loading Pad		Adequate	Unknown	f	Unknown	
		AST		Adequate	a	b	DWM	
		UST		Adequate	a	i	DWM	
		OWSs		Adequate	b,f	e	Weekly	
		Waste Oil UST		Adequate	b	e	DWM	
		Chemical Storage Area - Closed		Adequate	b	a	Weekly	
	m	Prime Beef Training Facility	No	n		n	Unknown	X
		Chemical Storage		Inadequate		d,g		
	1407	OPG Storage Solvents	X	m		m	Unknown	X
	1601	DRMO Building	No	n		e	Daily/Weekly	X
		Waste Chemical Storage		Inadequate	b	b,l	Daily/Weekly	
		Catch Basins		Adequate	b	g,e	Weekly	
2	1602/1603	DRMO Building		Adequate		e	Daily	X
		Small Capacitor Area	X	Inadequate	b	g	Unknown	
		AST		Inadequate	b	b,g	DWM	
		OWS (Catch basin)		Inadequate	b	g,e	Weekly	
		Scrap Metal Area		Inadequate	b	d,g	Unknown	
		Waste Chemical Area		Inadequate	b	b,f,l	Daily/Weekly	
3	655/656	Vehicle Maintenance Shop/Radio Work Center	No	n		n	Daily	X
		Washrack		Inadequate	b	f	Unknown	
		Chemical Storage		Inadequate	b	b,g	Daily	
		OWS		m	b	m	Weekly	
	657	CE Self Help Warehouse	No	Adequate	b	c	Daily	No
	670	Plastic Shop/Aircraft General Purpose	No	n		n	Daily	No
		Chemical Site No. 27		Adequate	c	a,h,j	DWQ	
	922	Base Service Station	No	Adequate	a	n,f		X
		USTs		Adequate	a	k	DWM	
		Waste Oil UST		Inadequate	a	e	Unknown	
		Chemical Storage		Inadequate	a	d,g,j	Daily	
		OWS		m	f	h	Weekly	
	948	5th CC Group Headquarters	No	n		n		No
		AST		Adequate	e	b,i	Monthly	
	949	AFCS Maintenance Facility	No	n		n		X
		Generator room (drain)		Inadequate	d	c, h	Biweekly/Monthly	
	959	AFCS Maintenance Facility	No	n		n		No
		Chemical Site No. 15		Adequate	c	a,f,j	DWQ	
		OWS		Adequate	b	m,h	Unknown	

TABLE 5.1 - Continued

Storm Water Contamination Risk Identification
Robins Air Force Base

Drainage Area No.	Location/ Facility No.	Facility Name/ Risk Component	Significant/ Historical Spill Site	Housekeeping (1)	Preventive Maintenance (2)	Spill Prevention/ Containment Measures (3)	Inspections(4)	Facility of Concern
3 (Cont'd)	963	AFCS Maintenance Facility	No	n		n	Daily	No
		UST		Adequate	c	i	Monthly	
	979	Warehouse Supply and Equipment	No	n		c		No
		OWS		Adequate		g		
	985	Auto Hobby Shop	No	Adequate		f		X
		Chem Site No. 55		Inadequate	c	a,g	DWQ	
		Catch basin and OWS		Inadequate	b	h	Weekly	
		Outside Area		Inadequate	b	g	Unknown	
	993	Thrift Shop	No	n		n		No
		UST		Adequate	e	i	Monthly	
	994	Thrift Shop	No	n		n		No
		UST		Adequate	c	i	Monthly	
	1178	Contractor Trailers	No	Inadequate	Unknown	g	Unknown	X
	1348	Spill Response Storage	No	Inadequate		d,g		X
	1351	AFCS Maintenance Facility	No	Inadequate		d,g	Unknown	X
	1364	QRP Maintenance Bays	No	Adeqaute	b	f,j	Daily	X
		OWS		Adequate	b	g	Weekly	
		Chemical Storage/Empty Drum Storage		Inadequate	b	d,f	Daily	
		UST-Waste Oil		Adequate	b	e	Daily	
	1549	Pesticide Storage	No	Adequate		c,l	Daily	X
		Chemical Storage Areas		Inadequate	b	a,b,g	Daily	
		Bermed Drain Area		Inadequate	b	l	Daily	
	1550	Transformer Storage Yard	No	Inadequate		d,g	Weekly	X
4	263	Security Police	No	n		n		No
		AST		Adequate	e	b,i	Monthly	
	269	Storage CV Facility	No	n		n		X
		AST		m		m		
		Chemicals Storage- Drums		Inadequate		d,g		
	270	Heavy Vertical Shop	No	n		n		X
		Generator/Compressor		Inadequate	b	g	Unknown	
		Chemical Site No. 24		Inadequate	c	a,g,j	DWQ	
	272/275	Protective Coating Shop	No	Adequate		e	Daily	X
		Chemical Site No. 23		Adequate	c	a,g,j	DWQ	
		Other Chemical Storage		Inadequate	b	b,d,g	Daily	
		Contractor Waste and Chemical Storage		Inadequate	Unknown	d,g	Unknown	

TABLE 5.1 - Continued
Storm Water Contamination Risk Identification
Robins Air Force Base

Drainage Area No.	Location/ Facility No.	Facility Name/ Risk Component	Significant/ Historical Spill Site	Housekeeping (1)	Preventive Maintenance (2)	Spill Prevention/ Containment Measures (3)	Inspections(4)	Facility of Concern
4 (Cont'd)	282	BE Storage CV Facility	X	m		m	Unknown	X
	286	Power Production	No	Adequate		e,n	Daily	No
		Chemical Site No. 25		Adequate	c	a,j	DWQ	
	286/292	Pave and Grounds Facility	No	n		n		X
		OWS		Inadequate	f	e	Unknown	
		Washrack and Chemical Storage		Inadequate	b	d,f	Unknown	
	294	Maintenance Facility	No	Inadequate		f		X
		Chemical Storage		Inadequate	b	d,g	Unknown	
	333	Mobile Equipment Storage	No	Inadequate		d,g		X
	340	Hazardous Materials Storage	X	Inadequate	b	c,j,l	Daily	X
		UST		Adequate	e	g,k	Monthly	
		AST		Adequate	b	c	Daily	
	376	Central Receiving	No	Adequate		d,g	Monthly	X
		AST		Adequate	c	g	Monthly	
	377	Fire Department	No	n		n,f	Daily	No
		Chemical Storage		Adequate	b	c,j	Unknown	
		OWS		Adequate	f	h	Weekly	
		AST		Adequate	c	b,g,k	Monthly	
	380	Warehouse Trucks	No	Inadequate		d,g		X
	511	Wellhouse-Water Supply W-5	No	n		n		No
		AST		Adequate	d	b,g,k	Biweekly/Monthly	
	591	Golf Course Maintenance	No	m		b,g		No
	595	Golf Course Clubhouse	No	n		n		No
		UST		Adequate	e	i,k	Monthly	
	603	Aircraft General Purpose	No	n		n		X
		AST		Inadequate	a	d,g	Unknown	
	606	Material Processing	No	n		n		X
		AST		Inadequate	e	d,g	Monthly	
	608	Fire Extinguisher Exchange	No	n		n		X
		AST		Inadequate	a	d,g	Unknown	
	612	Water Pumping Station	X	m		m		X
	614	Aircraft Maintenance	No	n		n		X
		Chemical area No.19		Inadequate	c	a,g	DWQ	
		OWS		m	b	h	Unknown	
		Wash Rack		m	b	f	Unknown	
		Steam Generator		Inadequate	Unknown	d	Unknown	

TABLE 5.1 - Continued

Storm Water Contamination Risk Identification
Robins Air Force Base

Drainage Area No.	Location/ Facility No.	Facility Name/ Risk Component	Significant/ Historical Spill Site	Housekeeping (1)	Preventive Maintenance (2)	Spill Prevention/ Containment Measures (3)	Inspections(4)	Facility of Concern
4 (Cont'd)	629	Heating Facility		n		n		No
		UST	No	Adequate	a	g,k	Unknown	
	630	Air Conditioned Plt. Building	No	n		n		X
		Chemical Storage		Inadequate		d,g		
	632	Avionics-Machine Shop	No	n		n		No
		OWS		Adequate	Unknown	h	Unknown	
	636	Storage-Solvents	No	n		n		X
		Chemical Site		Inadequate	c	d,g	Unknown	
	638	Storage-Solvents	No	n		n		No
		Chemical Site No. 26		Adequate	Site Inactive	a,g	Site Inactive	
	640	Avionics-Circuit Plating Shop	No	n		e,l	Unknown	X
		Chemical Storage/Drums/Scrap Metal		Inadequate	b	d,g	Unknown	
		AST (near Bldg. 628)		Inadequate	b	d,g	Unknown	
		Air Compressor		Inadequate	b	g	Unknown	
	641	Electronic Parts Warehouse	X	Inadequate		d,g		X
	644	Steam Facility Building	No	n		n		X
		AST		Inadequate	e	d,g	Monthly	
	645	Avionics-Circuit Plating Shop	X	n		n		X
		Chemical Storage		Inadequate	b	d,g	Unknown	
	646	Robins Federal Credit Union	X	m		m		X
	647	BE Maintenance Shop	X	m		m		X
	648	Wellhouse-Water Supply	No	n		n		No
		Chemical Storage		Adequate	b	g	Daily	
	700	Base Hospital	No	n		n		No
		AST		Adequate	e	b,g	Monthly	
	701	Material Services	No	n		n		X
		UST		Adequate	e	g,k	Monthly	
	812	Sanitary Sewer Pump Station	No	n		n		No
		UST		Adequate	d	g,k	Bi-Monthly	
	930	Animal Clinic	No	n		n		No
		UST		Adequate	e	g,k	Monthly	
5	1	Electric Power Station Building	No	n		n		No
		UST		Adequate	d	i	Bi-Monthly	
	9	Central Control	No	n		n		No
		UST		Adequate	d	g,k	Bi-Monthly	

TABLE 5.1 - Continued
Storm Water Contamination Risk Identification
Robins Air Force Base

Drainage Area No.	Location/ Facility No.	Facility Name/ Risk Component	Significant/ Historical Spill Site	Housekeeping (1)	Preventive Maintenance (2)	Spill Prevention/ Containment Measures (3)	Inspections(4)	Facility of Concern
5 (Cont'd)	11	TMTR Comm.	No	n		n		No
		AST		Inadequate		d,i	DWM	
6	226	Avionics Integration Support System Facility	X	n		n		X
		UST		Adequate	d	g, k	Bi-Monthly	
	231	Security Assistance Electronic Warfare Support Facility	No	n		n		No
		UST		Adequate	d	i	Bi-Monthly	
	300	Office Facility	No	n.		n		No
		UST		Adequate	a	i	DWM	
	304	Painting Shop	No	n		n		No
		Chemical Site No. 64		Adequate	c	a,i	DWQ	
	317	Contractor Maintenance Shop	No	n		n		X
		Vehicle lot/batteries		Inadequate	Unknown	d,g	Unknown	
	350	Warehouse Supply and Equipment	No	n		n		No
		UST		Adequate		g	DWM	
	353	Storage Facility	No	n		n		X
		AST		Inadequate		d,g		
	354	Parts Painting Facility	No	Adequate		n		X
		Chemical Site No. 6		Inadequate	c	a,g,j	DWQ	
		Paint Can Storage		Inadequate	b	d	Unknown	
	369	Dioxin Storage Facility	No	Adequate		c		X
		Enviropacs Storage		Inadequate	c	d,g	DWQ	
7	157	AST	No	Adequate		b		No
	158	Gyro Shop Facility	No	Adequate		e		X
		Chemical Storage		Inadequate	b	d,g	Daily	
		Vacuum Pump Houses		Inadequate	b	d,g	Daily	
		Cooling Tower		n	b	g	Daily	
	165	Science and Engineering Lab	No	Adequate		e		X
		Contractor Chemical Storage		Inadequate	Unknown	d,i	Unknown	
		Lab Chemical Storage		Inadequate	b	d,i	Unknown	
	166	Cafeteria	No	Inadequate		g		X
	169	Sheet Metal Shop	No	n		e		X
		Surrounding Area		Inadequate	b	d,g	Unknown	
	171	Shp A/M Orgl	X	n		n		X
		Chemical Site No. 4		Inadequate	c	a,g	DWQ	

TABLE 5.1 - Continued

Storm Water Contamination Risk Identification

Robins Air Force Base

Drainage Area No.	Location/ Facility No.	Facility Name/ Risk Component	Significant/ Historical Spill Site	Housekeeping (1)	Preventive Maintenance (2)	Spill Prevention/ Containment Measures (3)	Inspections(4)	Facility of Concern
7 (Cont'd)	173	Shp A/M Orgl	No	n		n		X
		Chemical Storage		Adequate	b	b,g	Weekly	
		Battery Station		Adequate	Unknown	d,g	Unknown	
	177	CES Maintenance Plant	No	n		n		No
		AST		Adequate	e	b,g	Monthly	
	180	Painting Facility	X	n		n		X
		Chemical Storage/Disposal Facility		Inadequate	b	d,g	Unknown	
	181	Aircraft General Purpose	No	n		e		X
		Cell 6 Water Pick Shop		Inadequate	b	d,g,e	Unknown	
		Cell 4 Chemical Storage		Inadequate	b	d,e	Unknown	
	183	Log Facility Dep Ops	No	n		n		X
		Motor & Generator		Inadequate	d	d,g	Biweekly/Monthly	
		AST		Adequate	Unknown	b,g	Unknown	
	190	Refueling Vehicle Maintenance Facility	No	n		f		X
		OWS		Adequate	b	e	Weekly	
		Chemical Storage		Inadequate	b	a,g	Unknown	
	196	POL Main Area	X	n		n		X
		Pump Pad		Adequate	a	b,g	DWM	
		Petroleum Drum Storage		Inadequate	b	d,g	Unknown	
		AST/UST		Adequate	a	b	DWM	
		OWS		m	b	m	Weekly	
		AST (outside fence)		Adequate	a	b,g	DWM	
	197	Military Service Station	No	n		n		X
		AST		Adequate	a	b	DWM	
		Chemical Storage		Inadequate	a	b,h	Unknown	
	206	Storage Facility	No	n		n		X
		AST		Inadequate		b		
	225	Communications Facility	No	n		n		No
		UST		Adequate	e	i,k	Monthly	
	227	Advanced Integrated Support Facility	No	n		n		X
		AST		Adequate	e	d,i,k	Monthly	
	228	Communications Computer Systems Facility	No	n		n		No
		UST		Adequate	b	g,k	Unknown	
	304	Facility and Battery Storage	No	Adequate	Unknown	c,e	Unknown	No
		Chemical Storage		Adequate	Unknown	a,g	Unknown	
	308	Vehicle Maintenance Shop-Tire Shed	No	n		n		X
		AST		Inadequate	b	d,g	Daily	
	309	WHSE SUP EQUIP DEP	X	Inadequate		d		X

TABLE 5.1 - Continued

Storm Water Contamination Risk Identification
Robins Air Force Base

Drainage Area No.	Location/ Facility No.	Facility Name/ Risk Component	Significant/ Historical Spill Site	Housekeeping (1)	Preventive Maintenance (2)	Spill Prevention/ Containment Measures (3)	Inspections(4)	Facility of Concern
7 (Cont'd)	314	Waste Treatment Building	No	n		n		No
		UST		Adequate	d	g,k	Biweekly/Monthly	
	318	Resource, Recovery, Recycling	No	n		n		X
		Storage Building-Contractors		Inadequate	Unknown	g	Unknown	
		Paper Shredder Machine		Inadequate	Unknown	g	Unknown	
		Washrack		Inadequate	Unknown	f	Unknown	
		OWS		Inadequate	Unknown	h	Unknown	
	319	Vehicle Maintenance Shop	No	Adequate		c,e	Daily	X
		Washrack and Drum Chemical Storage		Inadequate	b	d,f	Daily	
		OWS		Inadequate	f	e	Weekly	
	352	Industrial Waste Sludge Storage	No	Adequate		c		
		UST		Adequate	d	g,k	Biweekly/Monthly	No
		Washrack		Adequate	b	f	Unknown	
		OWS		Adequate	b	h	Weekly	
	360	Facility of IWTP	No	Adequate	b	c	Daily	X
		ASTs and Other Structures at 361 Complex		Inadequate	b	b	Daily	
		IWTP Dumpsters Next to 361		Inadequate	b	g	Daily	
	361	Central Waste Management Group	No	n		n		X
		Hazardous Waste Storage Building		Inadequate	b	c,j	Daily	
		Hazardous Waste Outside Compound		Inadequate	b	d,g	Daily	
		Hazardous Waste Chemical Site		Inadequate	b	a,g,j	Daily	
	363	Sewage Treatment and Disposal	No	n		n		No
		AST		Adequate	b	b,g	Daily	
	371	Sanitary Sewer Treatment Plant	No	n		n		X
		Chem Site No. 49		Inadequate	c	a,i,j	DWQ	
		AST-Lift Station		Adequate	d	b,i	Biweekly/Monthly	
8	12	Readiness Facility	No	n		n		No
		UST		Adequate	d	g,k	Biweekly/Monthly	
9	110	Maintenance Depot	X	m		m	DWM	X
	114	Jet Engine Hoist Tent	No	Inadequate		d,g		X
	125	Maint. Hangar Depot	X	n		n		X
		Chemical Site No. 3		Adequate	c	a,g	DWQ	
		Hangar		Inadequate		g		
		Wash Rack		Inadequate		d,g		
	127	Air Freight Terminal	No	Inadequate		g	DWM	X
	140	Aircraft General Purpose	No	n		n		X
		Chemical Site No.1		Inadequate	c	a,g,j	DWQ	
		Metal Shavings Bins		Inadequate	Unknown	d,g	Unknown	
	141	Industrial Waste Treatment	No	n	b	d,g	Daily	X

TABLE 5.1 - Continued

Storm Water Contamination Risk Identification
Robins Air Force Base

Drainage Area No.	Location/ Facility No.	Facility Name/ Risk Component	Significant/ Historical Spill Site	Housekeeping (1)	Preventive Maintenance (2)	Spill Prevention/ Containment Measures (3)	Inspections(4)	Facility of Concern
9 (Cont'd)	142	Plating Shop Facility	X	n		e,j	Weekly	X
		ASTs		Adequate	b	b,g	Weekly	
		Chemical Storage		Inadequate	b	d,g	Weekly	
		ScrapMetal w/Coolant		Inadequate	b	d,g	Unknown	
		Dust Collectors		Inadequate	b	d,g	Unknown	
	143	Water Pump Station	No	n		n		X
		Chemical Storage		Inadequate	b	d,j	Daily	
	147	Industrial Waste Treatment Plant Facility	X	n		n		X
		Hazardous Waste Tank		Inadequate	b	d	Unknown	
		Chemical Storage		Inadequate	b	d,h	Daily	
		Pumps		Inadequate	b	d,h	Daily	
	148	Welding Shop	No	n		n		X
		Chemical Storage		Inadequate	b	d,g	Weekly	
		Wash Rack		m	b	h	Unknown	
	149	Maintenance Depot	X	m	b	m	Weekly	X
	150	Hydrostatic Shop	No	n		e		X
		Lead Filings/Batteries/Halon Containers		Inadequate	b	d,g	Unknown	
10	40	Shp A/M Orgl Facility	No	n		n		X
		Chemical Site No. 47		Adequate	c	a,g,i	DWQ	
11		No Facilities Identified						
12	8	Log Facility	No	n		n		No
		UST		Adequate	e	d,g	Monthly	
	74	Electric Power Station Building	No	n		n		No
		UST		Adequate	d	g,k	Biweekly/Monthly	
	88	Flight Simulator	No	Adequate	e	b,h	Monthly	No
	100	Production, Ammo	No	n		n		No
		UST		Adequate	a	g,k	Monthly	
	2086	Mobility Processing Center	No	Inadequate		g		X
13		No Facilities Identified						
14	2	Rapcon Cen	No	n		d,g		X
	Pad 8	Pad 8	No	n		n		X
		Chemical Storage		Inadequate	b	b,d,g	Weekly	
		OWS		Inadequate	b	h	Weekly	
		Dumpster		Inadequate	b	d,g	Unknown	
		UST		Adequate	Unknown		Unknown	
	Pad 9	Outside painting facility	No	n		n		X
		Chemical Storage, Sand Blast Yard		Inadequate	b	g	Unknown	

TABLE 5.1 - Continued

Storm Water Contamination Risk Identification

Robins Air Force Base

Drainage Area No.	Location/ Facility No.	Facility Name/ Risk Component	Significant/ Historical Spill Site	Housekeeping (1)	Preventive Maintenance (2)	Spill Prevention/ Containment Measures (3)	Inspections(4)	Facility of Concern
14 (Cont'd)	19	Communications Facility	No	n		n		No
		AST		Adequate	e	b,i, k	Monthly	
	27	Electric Power Station Building	No	n		n		No
		ASTs, drum storage		Adequate	d	b,d,g	Biweekly/Monthly	
	30	Power Check	No	n		n		No
		OWS		Adequate	a,b	h	Weekly	
	36	Utility Vault	No	n		n		No
		UST		Adequate	a	d,i	Unknown	
	37	Control Tower	X	m		m		X
	39	Pump Station	No	n		n		No
		AST/UST		Adequate	d	b,g	Biweekly/Monthly	
	43	Log Facility	No	n		n		No
		UST		Adequate	e	i	Monthly	
	45	Crash Damage Center	No	n		n		X
		ASTs		Inadequate	a	d,g	Unknown	
		Chemical storage		Inadequate	c	d,g	Unknown	
		Holding Tank		Inadequate	b	d,g	Unknown	
	48	Maintenance Shop OWS	No	Adequate	b	h	Weekly	No
	49	Maintenance Dock	No	n		n		X
		Mobile Equipment		Inadequate	Unknown	g		
	50	Aircraft Corrosion Control	X	n		n		X
		Chemical site		Adequate	c	a,i	DWQ	
	51	Air Plt. Building	No	n		n		X
		Mobile Equipment		Inadequate	Unknown	g	Unknown	
	54	Corrosion Control Facility	X	n				X
		IWTP Prescreen		Inadequate	b	d,e,g	Unknown	
		Chemical Storage-drums		Inadequate	b	d,e,g	Weekly	
		Fuel Drop		Inadequate	b	d,g	Unknown	
	56	Communications Facility	No	n		n		X
		Dumpster, USTs		Inadequate		g		
	58	Disaster Preparedness	No	n		n		X
		AST		Inadequate	b	d,g	Unknown	

TABLE 5.1 - Continued

Storm Water Contamination Risk Identification

Robins Air Force Base

Drainage Area No.	Location/ Facility No.	Facility Name/ Risk Component	Significant/ Historical Spill Site	Housekeeping (1)	Preventive Maintenance (2)	Spill Prevention/ Containment Measures (3)	Inspections(4)	Facility of Concern
14 (Cont'd)	89	Maintenance Depot Chemical Site No. 27	X	Inadequate Inadequate	c	n a,g,j	DWQ	X
	91	Maintenance Depot Drum Storage	No	n n	b	n a, g	Unknown	No
	95	Water Tank Area AST	No	n Adequate	d	n b,g	Biweekly/Monthly	No
	131	Production Aircraft Fin ASMB Maint. Hanger with OWS	X	n. Inadequate	b	n d,g,j	Weekly	X
	137	Painting facility chemical storage OWS	No	Adequate Adequate	b b	c,g,j h	Unknown Weekly	No
	198	Aero Club	No	Adequate	b	a,i	Unknown	No
	203	Hydr Fl	X	m		m		X
	204	Refuel and defuel purge station	No	Adequate		g,j		No
	210	HQ Air Force Reserves UST	No	n Adequate	e	n i	Monthly	No
	214	Communications Facility UST	No	n Adequate	e	n i	Monthly	No
	245	Base Tax Center UST	No	n Adequate	e	n i	Monthly	No
15	2052	Fuel Shop Building (2) OWS Dumpster	No	Adequate Adequate Inadequate	f b	f e g	Biweekly Unknown	X
	2066	AREFS Tanker Maintenance Contractor Paint Spills OWS	No	Adequate Inadequate Adequate	Unknown b	f d h	Unknown Unknown	X
	2067	Maintenance Dock (2) OWSs	No	n Adequate	b	n h	Weekly	No
	2070	Flight Line Fuel Pumping Station USTs AST	No	n Adequate Inadequate	a a	n i,j b,i	DWM DWM	X
	2072	Flight Line Fuel Pumping Station USTs AST	No	n Adequate Inadequate	a a	n i,j b,i	DWM DWM	X
	2077	SQ Operations	No	Inadequate		g		X
	2080	Corrosion Control Chemical Site No. 12	No	n Adequate	c	n a,g,j	DWQ	No

TABLE 5.1 - Continued

Storm Water Contamination Risk Identification
Robins Air Force Base

Drainage Area No.	Location/ Facility No.	Facility Name/ Risk Component	Significant/ Historical Spill Site	Housekeeping (1)	Preventive Maintenance (2)	Spill Prevention/ Containment Measures (3)	Inspections(4)	Facility of Concern
15 (Cont'd)	2082	Shipping and Storage Facility	No	n		n		X
		OWS		n	f	h	Weekly	
		Chemical Site No. 9 - Closed		Inadequate	c	a,d,g	DWQ	
16	2078	Headquarters WG	No	Inadequate		d		X
		UST		Adequate	e	g,k	Monthly	
	2079	Sheet Metal Welding and Machine Shop	No	n		n		X
		Outdoor Chemical Storage Shed		Inadequate	b	d	Unknown	
		Washrack		Inadequate	b	f	Unknown	
		OWS		Inadequate	b	h	Weekly	
	2083	Steam Facility Building	No	n		n		No
		ASTs		Adequate	e	b.g	Monthly	
		OWS		Adequate	b	b,g	Weekly	
17	14	FAA Control Center	No	n		n		No
		AST		Adequate	e	b,i	Monthly	
	2061	Near Bldg. 2061, along Flightline	No	n		n		No
		AST		Adequate	e	b,i	Monthly	
	2075	Aircraft General Purpose	No	n				X
		UST		Adequate	e	g,k	Monthly	
		Equipment Containing Hydraulic Fluid		Inadequate	b	d,g	Unknown	
	2059	Warehouse Supply and Equipment	No	n		n		X
		UST		Adequate	a	i	DWM	
	2076	Jet Engine Maintenance	No	n				X
		UST		Adequate	e	g	Monthly	
		OWS		m	Inactive	h	Inactive	
		Drums Paint Waste-Contractors		Inadequate	N/A	d,g	N/A	
18		No Facilities Identified						

Notes: AST - Above-Ground Storage Tank.
UST - Underground Storage Tank.
IWTP - Industrial Wastewater Treament Plant.
OWS - Oil/Water Separator.
(m) - not inspected
(n) - Building not evaluated; only risk component evaluated.

(1) - Housekeeping ratings:
Adequate - Chemicals stored correctly. Area clean.
Inadequate - Improper chemical storage; leaks or spills present; or improper handling.

TABLE 5.1 - Continued

Storm Water Contamination Risk Identification
Robins Air Force Base

Drainage Area No.	Location/ Facility No.	Facility Name/ Risk Component	Significant/ Historical Spill Site	Housekeeping (1)	Preventive Maintenance (2)	Spill Prevention/ Containment Measures (3)	Inspections(4)	Facility of Concern

(2) - Preventive Maintenance:

(a) - CE performs preventive maintenance as required.
(b) - Responsibility of facility organization.
(c) - Maintenance performed as needed by chemical site manager.
(d) - CE/Power Production
(e) - CE/Heating Maintenance
(f) - Maintained by IWTP

(3) - Spill Prevention/Containment Measures:

(a) - Outdoor storage area is bermed, roofed, and has drainage valve.
(b) - Outdoor storage area has some form of secondary containment, such as a berm, dike, or double contained tank.
(c) - Chemicals are stored inside and spills would be contained in building.
(d) - Inadequate secondary containment for outdoor hazardous material storage or other bulk material storage.
(e) - Drains to industrial wastewater treatment plant, sanitary sewer, or is pumped out by CE (Utilities)
(f) - Drains to oil/water separator.
(g) -Drainage pathway to storm sewer, storm ditch, wetlands, or other surface water body.
(h) - Unknown drainage pathway
(i) - Area is flat with no apparent drainage pathway.
(j) - Spill response equipment (e.g., absorbent booms, dry absorbent, shovels) available at the site.
(k) - Inadequate secondary containment for loading and unloading of fuel.
(l) - Drains to holding tank or catch basin.

(4) -Inspections

DWM - Daily, weekly and monthly inspections are required by Section IV of T.O. 37-1-1.
DWQ - Daily, weeky and quarterly inspection.

SECTION 6
RECOMMENDED IMPROVEMENTS

6.1 INTRODUCTION

In Section 5, a risk identification is performed on potential sources of contamination at RAFB to identify "facilities of concern," which are those facilities that are believed to be potential sources of storm water contamination. In this section, recommended improvements are suggested for each potential contaminant source to mitigate the risk of storm water contamination associated with the identified facility. These recommendations are in addition to existing BMPs at RAFB, which are discussed in Section 4.

6.2 IMPROVEMENTS BY DRAINAGE AREA

Tables 6.1 through 6.18, presented by drainage area, describe potential sources of storm water contamination associated with "facilities of concern." In the tables, the description of the "potential contaminant source" is a narrative of the potential problem(s) observed during the field surveys or identified in the spill records for RAFB. The Potential Contaminant Source is located at or near the "facility of concern" listed in the table, and may or may not be directly associated with activities at the listed facility. In most cases, the potential source of contamination is a component of the facility (e.g., AST, UST) and not the actual facility itself. The specific locations of the potential contaminant sources are identified on the individual drainage area maps presented in Appendix D. The potential sources of stormwater contamination that were photographed during field activities are assigned a Photo identifier. The specific photograph is included in Appendix G.

Recommended improvements are presented for each Potential Source of Contamination identified. The recommendations are grouped according to the following categories:

1. **Correct/Inspect/Prevent** - This level recommends best management practices requiring minimal action including improving:
   - housekeeping;
   - preventive maintenance;
   - visual inspections;
   - spill prevention and response;
   - employee training; and

- recordkeeping and reporting.

Specific examples of category one actions include:

- closing an open valve;
- plugging an illicit connection (It is recognized that plugging an illicit connection would likely involve more extensive effort to reroute the illicit connection; however, identification of alternatives for correction of illicit connections is beyond the scope of this project.);
- integrity testing of storage tanks; and
- locating proper spill response equipment at a potential spill site.

2. **Remove/Dispose** - This level recommends removal and proper disposal of waste material that has the potential to contaminate storm water. Regular inspection and preventive maintenance should be performed to prevent recurrence.

3. **Relocate** - This level recommends relocation of a potential contaminant source to a contained and/or roofed area or relocation away from a storm inlet or storm ditch. In most cases, the contained area is in proximity to the potential contaminant source. If a nearby contained area is not available, this recommendation would upgrade to a category 4 recommendation.

4. **Containment** - This level recommends containment, or improvement to an existing containment system, to prevent contaminants from contacting storm water. This category includes sealing porous surfaces, repairing cracked or defective containment berms, etc. If containment is not possible or would lead to excessive maintenance (e.g., frequent removal of contained storm water), then the area would need to be covered or enclosed to provide complete isolation of the potential contaminant source from storm water contact.

5. **Additional Study** - This level recommends further analysis to determine contamination potential and identify the appropriate action.

The recommended minimum action is identified in Tables 6.1 through 6.18 for each potential contaminant source; higher level actions can be undertaken to provide additional protection.

Finally, a priority (low (L), medium (M), or high (H)) for implementation is assigned to each recommended improvement. The schedule for implementation of the recommended improvements is presented in Section 7.

TABLE 6.1

STORM WATER MANAGEMENT IN DRAINAGE AREA 1

Facility of Concern	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Photo ID No.	Priority[1]
DRMO	1601	Chemical drums are stacked in such a manner that they hang over berm.	Relocate		H
Prime Beef Training Facility	Prime Beef	8 unlabelled drums strapped to pallet resting on ground; no secondary containment.	Relocate		M
OPG STOR SOLVENTS	1407	Significant spill site.	None		NA

(1) H - High
M - Medium
L - Low

TABLE 6.2

STORM WATER MANAGEMENT IN DRAINAGE AREA 2

Facility of Concern	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Photo ID No.	Priority[1]
DRMO	1602/1603	Berm in petroleum waste storage area is cracked. Oil spills are evident on pavement; oil/water will flow through cracks to storm inlet during rain events.	Containment		M
		OWS functions as catch basin for bermed area where waste-oil drums and electrical transformers are stored; if OWS fills during consecutive storms, overflow will spill into adjacent storm sewer box.	Additional Study		L
		Drum of motor oil used to serve cardboard compaction machine at southeast corner of DRMO complex has drip bucket located under spigot that is full and overflowing onto ground; no secondary containment.	Correct/Inspect/Prevent		H
		Valve in AST dike is left open. Tank is leaking and water/diesel fuel flow to storm ditch.	Correct/Inspect/Prevent		H
		Seven pallets of lead-acid batteries are exposed to precipitation; no secondary containment.	Relocate		M

TABLE 6.2 (Continued)
STORM WATER MANAGEMENT IN DRAINAGE AREA 2

Facility of Concern	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Photo ID No.	Priority[1]
DRMO (Continued)	1602/1603	Scrap metal and parts contaminated with oil are stored in un-roofed concrete storage bays; during rain events oil is washed out of bays into storm inlets that discharge to storm ditch; (black residue was noted in ditch prior to new construction which replaced ditch with underground collection system.)	Containment	DA2-1	M
		Hazardous material drums adjacent to Building 1603 (one containing suspect PCBs) stored approximately two feet from storm drain; drum lids are not secure; no secondary containment.	Relocate	DA2-2	M
		Significant spill site.	None		NA

(1) H - High
M - Medium
L - Low

TABLE 6.3

STORM WATER MANAGEMENT IN DRAINAGE AREA 3

Facility of Concern	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Photo ID No.	Priority[1]
Vehicle Maintenance Shop/Radio Work Center	655/656	Berm valve at washrack left open to drain rainwater.	Correct/Inspect/Prevent		H
		Antifreeze drip pan filled to capacity.	Correct/Inspect/Prevent		H
Base Service Station	922	Waste antifreeze drums stored outside building without secondary containment; one drum lid was not secure.	Remove/Dispose		M
		Waste oil spills around waste oil UST funnel. (Waste oil UST is for general use.)	Containment	DA3-1	M
		Berm in gas station lot has gaps that permit runoff to reach grass field.	Containment		M
AFCS Maintenance Facility	949	Oil/water waste effluent pipe from generator discharges into floor drain. (Floor drain has unknown discharge location.)	Additional Study		H
Auto Hobby Shop	985	Section missing from washrack berm; wash water contaminated with oil and degreaser can escape bermed area and flow to storm ditch.	Containment	DA3-2	M
		Drums stored outside of bermed area at Chemical Site No. 55.	Relocate		M
		Shop generator is leaking oil to pavement.	Correct/Inspect/Prevent		H

TABLE 6.3 (Continued)

STORM WATER MANAGEMENT IN DRAINAGE AREA 3

Facility of Concern	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Photo ID No.	Priority[1]
Auto Hobby Shop (Continued)	985	OWS discharges to storm drain; OWS is fed by storm inlet that drains car maintenance and car painting area.	Additional Study		H
		Large portion of shop lot drains directly to storm ditch.	Containment		H
		Evidence that paint had been poured into storm drain.	Correct/Inspect/Prevent		H
Contractor Trailers	1178	Sewage holding tanks ("Handi-John") connected to trailers were overflowing onto ground. Trailers located north of Luna Lake.	Correct/Inspect/Prevent		H
Spill Response Storage	1348	Approximately 40 green Enviropac containers, previously used to store granular sorbent contaminated with spill waste such as JP-4, are stored on ground with no cover and no secondary containment; containers are currently empty.	Relocate		M
AFCS Maintenance Facility	1351	Two brown cabinets, labeled "FLAMMABLE" are located inside fence east of Building 1351; There is dead, stained grass with an oily odor due to a leak from the cabinets.	Correct/Inspect/Prevent		L
		There are numerous transformers mounted on concrete pads around perimeter of facility; oil was leaking from transformers onto pads and onto ground; these transformers were located at east and west ends of compound, just outside the fence.	Correct/Inspect/Prevent		H

TABLE 6.3 (Continued)

STORM WATER MANAGEMENT IN DRAINAGE AREA 3

Facility of Concern	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Photo ID No.	Priority[1]
QRP Maintenance Facility	1364	Various drums, with contents including diesel and MOGAS resting directly on pavement with no secondary containment; drainage is to detention basin, followed by OWS, followed by Scout Lake.	Relocate		M
		OWS appears to be fed by uncovered waste pit at outdoor vehicle wash bays; the separator appears to discharge to detention basin east of the facility parking lot and ultimately to Scout Lake.	Additional Study		H
Pesticide Storage	1549	Drum rinse pad in front of shop drains to two 800-gal tanks. If pesticide rinseate is allowed to continue to pool, it could overflow to storm ditches.	Additional Study	DA3-3	L
		Drums stored outside of chemical area.	Relocate		M
Transformer Storage	1550	Several gallons of paint spilled on ground; (spilled/dumped by contractor constructing new building.)	Correct/Inspect/Prevent		H
		55-gal drum of sealer and open cans of oily fluid stored on asphalt by contractor without secondary containment.	Relocate		M

(1) H - High
M - Medium
L - Low

TABLE 6.4
STORM WATER MANAGEMENT IN DRAINAGE AREA 4

Facility of Concern	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Photo ID No.	Priority[1]
Storage CV Facility	269	Drum labeled as hazardous material is exposed to precipitation; no containment.	Relocate		M
Heavy Vertical Shop	270	Valve in Chemical Site No. 24 berm is left open; drainage is to storm ditch.	Correct/Inspect/Prevent		H
		Air compressor is leaking oil onto pavement.	Correct/Inspect/Prevent		H
Protective Coating Shop	272/275	Dumpster with no top contains disposed paint cans.	Remove/Dispose		M
		Improper waste paint and bucket storage; paint buckets, many still containing paint, stored on concrete.	Remove/Dispose		M
		Chemical drums stored without secondary containment in parking lot.	Relocate		M
		Numerous paint spills on asphalt from paint trailers; drainage to storm inlet.	Correct/Inspect/Prevent		L
BE STOR CV FCLTY	282	Significant spill site.	None		NA
Pave and Grounds Facility	286/292	Sediment trap is filled with debris; possibility of oil-contaminated water discharging into storm drain if sediment trap backs up.	Correct/Inspect/Prevent		M
		Pans containing cleaning/degreasing compound drums are filled with liquid.	Correct/Inspect/Prevent		H

TABLE 6.4 (Continued)

STORM WATER MANAGEMENT IN DRAINAGE AREA 4

Facility of Concern	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Photo ID No.	Priority[1]
Maintenance Facility	294	Employees indicated that they have not received training.	Correct/Inspect/Prevent		M
		Waste oil drums are disarranged within an approximate two-inch berm; berm noted in poor condition and may not be effective in the event of a release.	Containment		M
		Equipment is leaking oil.	Correct/Inspect/Prevent		H
		Hydraulic fluid draining into storm inlet during vehicle maintenance, due to vehicle being parked over inlet.	Correct/Inspect/Prevent	DA4-1	H
		Unlabeled drums exposed to precipitation; containment pans are filled to capacity; drums are located at wash station south of Building 294.	Correct/Inspect/Prevent		H
Mobile Equipment Storage	333	Petroleum product leaking from piece of mobile equipment resting on jack; location is approximately 300 feet east-northeast of Building 333.	Correct/Inspect/Prevent		H
Hazardous Materials Storage	340	Cracks in floor and gaps in expansion joints inside building; spill could escape through cracks to storm water.	Containment		M
		Significant spill site.	None		NA

TABLE 6.4 (Continued)

STORM WATER MANAGEMENT IN DRAINAGE AREA 4

Facility of Concern	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Photo ID No.	Priority[1]
Central Receiving	376	Unloading area for hazardous materials; no containment; no spill equipment; drums transported by forklift across busy road.	Containment		L
		Loading spill at AST would be difficult to contain and would flow to storm inlet.	Containment		L
Warehouse Trucks	380	Spills/leaks from trucks with mounted machinery parked south of Building 380.	Correct/Inspect/Prevent	DA4-2	M
Aircraft General Purpose	603	Air compressor waste oil/water collection drum on rack is leaking oil to ground; stained soils were noted during investigation.	Remove/Dispose	DA4-3	H
Material Processing	606	AST has no secondary containment and is leaking diesel fuel to concrete pad and soil.	Containment	DA4-4	M
Fire Extinguisher Exchange	608	55 gal. waste oil collection drum stored outside on rack with no secondary containment.	Relocate		M
WTR PMP STN	612	Significant spill site from ruptured industrial waste line.	None		NA
Aircraft Maintenance	614	Chemical drums at Chemical Site No. 19 are disarranged; drip pans are not in place; contaminated absorbant pads and rags are scattered throughout the area and improperly stored in plastic bags.	Correct/Inspect/Prevent		M
		Berm has unvalved drainage pipe; rainwater washes spilled materials to storm drain which discharges to storm ditch.	Correct/Inspect/Prevent		H

TABLE 6.4 (Continued)

STORM WATER MANAGEMENT IN DRAINAGE AREA 4

Facility of Concern	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Photo ID No.	Priority[1]
Aircraft Maintenance (Continued)	614	Waste collection drum at steam generator has no secondary containment; stained soils were noted during investigation.	Containment		M
Air Conditioned Plt. Building	630	Drums stored with no secondary containment on west side of Building 630. One drum labeled as beryllium oxide.	Relocate		M
Storage-Solvents	636	Some drums in chemical storage area are exposed to precipitation and are stored outside containment.	Relocate		M
		Hazardous materials stored outside with only partial secondary containment; drainage to storm ditch.	Relocate		M
Avionics Circuit Plating Shop	640	Beryllium oxide drums stored outside on pavement without secondary containment.	Relocate		M
		Rusted AST with leakage.	Correct/Inspect/Prevent		H
		Air compressor is leaking oil to pavement.	Correct/Inspect/Prevent		H
Electronic Parts Warehouse	641	Unlabeled drum on loading dock on west side of building exposed to precipitation; no secondary containment.	Relocate		M
		Significant spill site from ruptured IWTP line.	None		NA
Steam Facility Building	644	Two large ASTs with no secondary containment; loading spill would be difficult to control considering proximity to storm ditch.	Containment		M

TABLE 6.4 (Continued)

STORM WATER MANAGEMENT IN DRAINAGE AREA 4

Facility of Concern	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Photo ID No.	Priority[1]
Avionics Circuit Plating Shop	645	Beryllium oxide drums stored outside on pallets without secondary containment; lids not secure on all drums.	Relocate		M
		Significant spill site from ruptured industrial line.	None		NA
Robins Federal Credit Union	646	Significant spill site from industrial line release.	None		NA
BE MAINT SHOP	647	Significant spill site from IWTP backflow.	None		NA
Material Services	701	500-gal diesel UST is located 4 to 5 ft from drainage ditch/creek; fuel loading spill would flow directly to creek.	Containment	DA4-5	L

(1) H - High
M - Medium
L - Low

TABLE 6.5

STORM WATER MANAGEMENT IN DRAINAGE AREA 5

Facility of Concern	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Photo ID No.	Priority
		No Facilities of Concern Identified in Drainage Area 5			

TABLE 6.6

STORM WATER MANAGEMENT IN DRAINAGE AREA 6

Facility of Concern	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Photo ID No.	Priority[1]
Avionics Integration Support System	226	UST fuel loading spill has potential to reach nearby storm drain.	Containment		L
		Significant spill site from capacitor leaking on roof (PCB).	None		NA
Contractor Maintenance Shop	317	Tarps on ground used for truck maintenance by cafeteria dumpster contractor; tarps and adjacent ground covered with oil.	Remove/Dispose		H
		Approximately 6 automotive batteries stored on ground, exposed to precipitation.	Relocate		M
Storage Facility	353	AST with no secondary containment.	Containment		M
		Exterior of AST is rusted.	Correct/Inspect/Prevent		M
Parts Painting Facility	354	Racks with drums in Chemical Site No. 6 extend beyond secondary containment.	Relocate		M
		Stains from dumpster leading to storm drain.	Correct/Inspect/Prevent		L
Dioxin Storage Facility	369	4 Enviropacs (metal containers used for storage of recovered waste from spills) resting on ground.	Relocate		M

(1) H - High
M - Medium
L - Low

TABLE 6.7
STORM WATER MANAGEMENT IN DRAINAGE AREA 7

Facility of Concern	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Photo ID No.	Priority[1]
Gyro Shop	158	Vacuum pumps leaking oil; drip pans are not in place for all pumps.	Correct/Inspect/Prevent		H
		5-gal acetone cans stored on grass in proximity (4 feet) to storm drain; cans still contain product; cans are not rinsed; disposed of in dumpster.	Remove/Dispose		M
Science & Engineering Lab	165	Spills on ground from paint spraying machine operated by painting contractor.	Correct/Inspect/Prevent	DA7-1	H
		Two drums of hazardous waste stored on ground; one of the drum labels indicates contents are lead paint chips.	Relocate		M
		Dumpster outside contains several 5 gal chemical cans.	Correct/Inspect/Prevent		M
		No spill equipment available for outdoor chemical storage.	Correct/Inspect/Prevent		M
Cafeteria	166	Cafeteria employees dumping floor wash water into storm inlet; odor of disinfectant coming from water.	Correct/Inspect/Prevent		H
		Disposed wash water flowing from area of door on south side of cafeteria toward storm inlet on Byron Street.	Correct/Inspect/Prevent		H

TABLE 6.7 (Continued)

STORM WATER MANAGEMENT IN DRAINAGE AREA 7

Facility of Concern	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Photo ID No.	Priority[1]
Sheet Metal Shop	169	Debris on storm grate; dumpster placed almost over top of inlet.	Correct/Inspect/Prevent		L
		Dark stain on ground and concrete pad next to pipe; pad supports 4 ASTs.	Correct/Inspect/Prevent		L
Shp A/M Orgl	171	Berm valve open at Chemical Site No. 4; spill would discharge to storm drain; no spill containment equipment on site.	Correct/Inspect/Prevent		H
		Significant spill site from drum puncture.	None		NA
Shp A/M Orgl	173	Battery filling station is exposed to precipitation; no secondary containment.	Relocate		M
Painting Facility	180	Greasy aircraft parts parked outside on dollies with no temporary cover.	Relocate		M
		Dumpster containing numerous crushed paint cans overturned on asphalt; paint residue from cans flowing into storm inlet.	Correct/Inspect/Prevent	DA7-2	H
		Numerous paint buckets with flammable symbols stored outside on pallets. (May have been moved there temporarily for floor refinishing.)	Relocate		M
		Multiple paint spills and unknown material spills throughout area.	Correct/Inspect/Prevent		M
		Significant spill site.	None		NA

TABLE 6.7 (Continued)

STORM WATER MANAGEMENT IN DRAINAGE AREA 7

Facility of Concern	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Photo ID No.	Priority[1]
Aircraft General Purpose	181	Cleaning compounds and solvents are stored outdoors without secondary containment.	Relocate		M
		Petroleum and paint wastes from floor drain filters are disposed of in dumpster.	Correct/Inspect/Prevent		H
		Wash water flows from building, down ramp to storm sewer; wash water is potentially contaminated with cleaning compounds, PD850, petroleum, and paint waste/chips.	Correct/Inspect/Prevent	DA7-3	H
		Discolored water leaking slowly from crack at base of building wall at north end of building.	Correct/Inspect/Prevent		H
Log Facility Dep Ops	183	Concrete pad supporting diesel-powered generator is heavily stained.	Correct/Inspect/Prevent		M
		Battery too close to edge of cover.	Relocate		M
Refueling Vehicle Maintenance Shop	190	Stains on soil near waste oil tank. Waste oil tank overhanging secondary containment.	Containment		M
POL	196	Hole in containment curb at pumping pad.	Containment		M
		Petroleum drum without containment next to AST containment dike; exposed to precipitation.	Relocate		M
		Significant spill site from broken equipment.	None		NA
Military Service Station	197	Drums overhang secondary containment; inadequate drip pan.	Containment	DA7-4	M
Storage Facility	206	Large DF-2 AST area is diked but has storm inlet in diked area; AST valve leaking.	Correct/Inspect/Prevent	DA7-5	H

TABLE 6.7 (Continued)

STORM WATER MANAGEMENT IN DRAINAGE AREA 7

Facility of Concern	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Photo ID No.	Priority[1]
Vehicle Maintenance Shop - Tire Shed	308	AST containing antifreeze leaks at valve. Drip pans may fill during rain events and overflow to storm sewer; inadequate secondary containment.	Correct/Inspect/Prevent		M
Warehouse Supply and Equipment Depot	309	Drum labelled as combustible liquid is stored on loading dock with no secondary containment.	Relocate		M
		Significant spill site from broken IWTP line.	None		NA
Paper Recycling Facility	318	Garbage truck dripping liquid residue onto ground.	Correct/Inspect/Prevent		H
		Shredded paper on ground from shredding machine	Correct/Inspect/Prevent		H
		OWS/Wash rack area lacking maintenance	Correct/Inspect/Prevent		H
Advanced Integrated Support Facility	227	No secondary containment for AST.	Containment		M
Vehicle Maintenance Shop	319	Batteries stored on pavement, exposed to precipitation.	Relocate		M
		Drums (one rusty) stored on asphalt next to steam wash pad; no secondary containment.	Relocate	DA7-6	L
		Very thick layer of oil and grease at top of OWS at steam wash pad; O/W separator filled to capacity; observed green fluid backing up out of steam clean drain that feeds OWS.	Correct/Inspect/Prevent		H

TABLE 6.7 (Continued)

STORM WATER MANAGEMENT IN DRAINAGE AREA 7

Facility of Concern	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Photo ID No.	Priority[1]
Vehicle Maintenance Shop (Continued)	319	6-in berm with gap at steam clean and wash rack area is not containing wash water; observed oily water escaping from area to storm inlet.	Containment	DA7-7	H
		Drain at washrack backs-up.	Correct/Inspect/Prevent		H
Advanced Integrated Support Facility	227	No secondary containment for AST.	Containment		M
Central Waste Management Group	360/361	Chemical spills due to puncture of drums by fork lift.	Correct/Inspect/Prevent		M
		Dumpsters outside of compound contained drums, buckets of paint and adhesive remover; paint spills on grass; dumpsters were leaking liquid to grass; area drains to storm water ditch.	Remove/Dispose		H
		Manager not sure whether employees have received training.	Correct/Inspect/Prevent		M
		Sheen on standing water and on water leaking from empty drums.	Correct/Inspect/Prevent		H
		Insufficient quantities of spill equipment and absorbent material.	Correct/Inspect/Prevent		M
		Drums of environmental waste are staged outside on pavement for sampling, overpacking, etc.; no secondary containment for the staging area.	Relocate		M
Sanitary Sewer Treatment Plant	371	Drums containing liquid from monitoring wells are exposed to precipitation.	Relocate		M

(1) H - High M - Medium L - Low

TABLE 6.8

STORM WATER MANAGEMENT IN DRAINAGE AREA 8

Facility of Concern	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Photo ID No.	Priority
		No Facilities of Concern Identified in Drainage Area 8			

TABLE 6.9
STORM WATER MANAGEMENT IN DRAINAGE AREA 9

Facility of Concern	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Photo ID No.	Priority[1]
Maintenance Depot	110	Significant spill site from lightning strike.	None		NA
Jet Engine Hoist Tent	114	20 to 30 fluid collection pans stored on pavement under jet engines, covered by tent; numerous stains on pavement in this area.	Correct/Inspect/Prevent		H
Maintenance Hangar Depot	125	Milky fluid, probably from floor cleaning machine, flowing over asphalt into strip drain connected to storm sewer on east side of Building 125.	Correct/Inspect/Prevent		H
		Milky fluid with disinfectant odor on pavement next to north wall of Building 125.	Correct/Inspect/Prevent	DA9-4	H
		Two containers of alkaline are exposed to precipitation; data sheet indicates that chemical is hazardous.	Relocate		L
		Significant spill site caused by improper procedures.	Correct/Inspect/Prevent		M
Air Freight Terminal	127	Several trucks with hydraulic lift platforms leaking hydraulic fluid onto pavement; trucks parked on south side of Building 127 inside fence.	Correct/Inspect/Prevent		H
Aircraft General Purpose	140	No emergency response equipment/materials at Chemical Site No. 1.	Correct/Inspect/Prevent		M
		Metal shavings in bins placed adjacent to storm inlet at northeast corner of east wing of Building 140; lubricant used for metal cutting is running into storm inlet.	Remove/Dispose	DA9-5	H

TABLE 6.9 (Continued)

STORM WATER MANAGEMENT IN DRAINAGE AREA 9

Facility of Concern	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Photo ID No.	Priority[1]
Industrial Waste Treatment	141	Flammable liquid cabinets placed within 5 feet of storm inlet; any spills/leaks from cabinets would enter inlet.	Relocate	DA9-6	M
Plating Shop	142	Floor wash water flows to storm drains.	Correct/Inspect/Prevent	DA9-7	H
		Scrap metal in bins with machine coolant leaking to ground; storm inlet approximately 15 ft downslope.	Remove/Dispose		H
		Triple rinsed drums of 1,1,1-trichloroethane turned upside down to drain on pavement, sloping to storm drain.	Correct/Inspect/Prevent		M
		Dust collectors from blasting operations scatter fine dust and debris on ground; debris contains aluminum oxide, walnut hull, and glass beads.	Correct/Inspect/Prevent		H
		Storm inlet on east side of building is covered with plastic sheet to prevent entry of cyanide waste overflowing from building.	Correct/Inspect/Prevent		H
		Significant spill site.	None		NA
Water Pump Station	143	Materials stored outside without secondary containment; no spill equipment within easy access.	Relocate		M
Industrial Waste Treatment Plant	147	No secondary containment for hazardous waste tank; evidence of leaks under tank which flow to storm inlets.	Containment		M
		Evidence of leakage at pH basin. Drainage flows to storm inlet.	Containment		M

TABLE 6.9 (Continued)

STORM WATER MANAGEMENT IN DRAINAGE AREA 9

Facility of Concern	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Photo ID No.	Priority[1]
		Drip pans placed under pipes connected to pumps; liquid overflows onto ground during storm.	Correct/Inspect/Prevent		H
		Use of untreated water to wash off pumps (with phenol in water).	Correct/Inspect/Prevent		M
		Pipe leads directly to storm water drain; has a valve to control flow of "treated" waste water to storm drain.	Correct/Inspect/Prevent		H
		Significant spill site from pump failure.	None		NA
Welding Shop	148	Oily wash water and equipment fluids escaping wash rack; flow directly to storm inlet.	Containment		H
		Drums stored on pallets with no secondary containment.	Relocate		M
Maintenance Depot	149	Significant spill site from ruptured industrial waste line (cut by lawn mower).	Correct/Inspect/Prevent		L
Hydrostatic Shop	150	Battery acid runs across sloped floor and through back door onto ground.	Correct/Inspect/Prevent		H

(1) H - High
M - Medium
L - Low

TABLE 6.10

STORM WATER MANAGEMENT IN DRAINAGE AREA 10

Facility of Concern	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Photo ID No.	Priority[1]
Shp A/M Orgl Facility	40	No spill equipment stored onsite at Chemical Site No. 47.	Correct/Inspect/Prevent		M

(1) H - High
M - Medium
L - Low

TABLE 6.11

STORM WATER MANAGEMENT IN DRAINAGE AREA 11

Facility of Concern	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Photo ID No.	Priority
		No Facilities of Concern Identified in Drainage Area 11			

TABLE 6.12

STORM WATER MANAGEMENT IN DRAINAGE AREA 12

Facility of Concern	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Photo ID No.	Priority[1]
Mobility Processing Center	2086	Dumpster with fuel smell.	Correct/Inspect/Prevent		M

(1) H - High
M - Medium
L - Low

TABLE 6.13

STORM WATER MANAGEMENT IN DRAINAGE AREA 13

Facility of Concern	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Photo ID No.	Priority
		No Facilities of Concern Identified in Drainage Area 13			

TABLE 6.14

STORM WATER MANAGEMENT IN DRAINAGE AREA 14

Facility of Concern	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Photo ID No.	Priority[1]
Rapcon Cen	2	2 ASTs containing fuel are exposed to precipitation and have no secondary containment.	Containment		M
Pad 8	NA	Drum of cleaning compound leaking product from spigot onto pavement.	Correct/Inspect/Prevent		H
		OWS is releasing petroleum products into swale.	Correct/Inspect/Prevent	DA14-1	H
		Wash water from KGM washrack escapes berm.	Containment	DA14-8	H
		Plug is removed from dumpster; oily waste is discharging onto ground.	Correct/Inspect/Prevent		H
Pad 9	NA	Thick paint residue on asphalt in sand blasting yard at Pad 9, approximately 400 ft west of Building 33.	Remove/Dispose		M
Control Tower	37	Significant spill site; purge fluid.	None		NA
Crash Damage Center	45	Fuel bowser (mobile tank) collects fuel from solar distillation unit and is not checked on a daily basis; has spill potential if unit is overfilled or distillate line comes loose.	Correct/Inspect/Prevent		L
		Fuel recovery unit berm is cracked.	Containment	DA14-2	M
		Generator is leaking oil onto pavement.	Correct/Inspect/Prevent		H
L/A Maint. Dock	49	Fuel leaking or spilled from mobile equipment.	Correct/Inspect/Prevent	DA14-3	H

TABLE 6.14 (Continued)

STORM WATER MANAGEMENT IN DRAINAGE AREA 14

Facility of Concern	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Photo ID No.	Priority[1]
Aircraft Corrosion Control	50	Significant spill site from foam suppression unit	None		NA
CMPRS AIR PLT BLDG	51	Fuel leaking from mobile equipment and flowing into storm inlet.	Correct/Inspect/Prevent		H
Corrosion Control Facility	54	Industrial pretreatment area is partially bermed and filter screen is exposed to rain/air/wind. Driveway sloped towards storm drain. Paint chips, wastewater and solvent are sources of storm water contamination.	Correct/Inspect/Prevent		L
		No. 2 fuel drop has stains on pipe and concrete pad; dead vegetation under pipe.	Correct/Inspect/Prevent	DA14-4	L
		Drums labeled as "Hazardous Waste" stored on concrete pad without containment, adjacent to strip drain; label indicates that drums contain waste paint.	Remove/Dispose		M
		Significant spill site from ruptured IWTP line.	None		NA
Comm Facility	56	Open dumpster with chemical smell; adjacent ground is stained; bottom of dumpster rusted.	Correct/Inspect/Prevent		L
		Heavily stained ground near fill pipes for USTs.	Correct/Inspect/Prevent	DA14-5	M
Disaster Preparedness	58	Gasoline AST with no secondary containment.	Containment		M
Maintenance Depot	89	Valve in berm found open and draining to concrete.	Correct/Inspect/Prevent		H
		Open unsecured drums are placed on flat bed truck and moved over rough pavement.	Correct/Inspect/Prevent		L

TABLE 6.14 (Continued)

STORM WATER MANAGEMENT IN DRAINAGE AREA 14

Facility of Concern	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Photo ID No.	Priority[1]
		Significant spill site from IWTP line rupture.	None		NA
		Fluid leaking from machinery has stained concrete pad and killed grass; absorbent pellets have been placed below one piece of equipment.	Correct/Inspect/Prevent	DA14-6	H
		Precipitation potentially entering roll-off containers used for storage of hazardous waste (paint and related products) due to tarp condition.	Correct/Inspect/Prevent		M
		Rusty dumpster with no top contains cans with chemical residues; dumpster has chemical odor.	Correct/Inspect/Prevent		M
		Trash cans, bucket, and brush resting on dollies parked over strip drain; bucket contains amber colored fluid; paint spills on concrete next to drain.	Correct/Inspect/Prevent	DA14-7	M
Production Aircraft Fin ASMB	131	Hydraulic test stands leak hydraulic oil to pavement; spills migrate to storm drain.	Containment		H
Hydr Fl	203	Significant spill site.	None		NA

(1) H - High
M - Mediuum
L - Low

TABLE 6.15

STORM WATER MANAGEMENT IN DRAINAGE AREA 15

Facility of Concern	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Photo ID No.	Priority[1]
Fuel Shop Building	2052	Dumpster with fuel odor.	Correct/Inspect/Prevent		M
Tanker Maintenance	2066	Containers of mineral spirits and paint stored outside on asphalt, exposed to precipitation.	Relocate		M
Flight Line Fuel Pumping Station	2070	Hole in AST berm where valve is missing; rain water drains to grass.	Correct/Inspect/Prevent		M
Flight Line Fuel Pumping Station	2072	Rain water entering AST berm area drains out to grass; valve is left open.	Correct/Inspect/Prevent		H
SQ Operations	2077	Dumpster with fuel odor.	Correct/Inspect/Prevent		M
Shipping and Storage Facility	2082	Oily substance leaking from base of dumpster.	Correct/Inspect/Prevent		H
		Oil leaking onto asphalt parking from mobile equipment (NW of Building 2082).	Correct/Inspect/Prevent		H

(1) H - High
M - Medium
L - Low

TABLE 6.16

STORM WATER MANAGEMENT IN DRAINAGE AREA 16

Facility of Concern	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Photo ID No.	Priority[1]
Headquarters WG	2078	Containers of paint and mineral spirits are open and exposed to precipitation.	Relocate		M
Sheet Metal Welding & Machine Shop	2079	Wash rack and OWS are inactive, used only to wash cars; OWS is not being serviced. Effluent route is unknown.	Additional Study		M
		Spills of lube oil observed in temporary storage shed.	Correct/Inspect/Prevent		H
		Oil drum and fuel container exposed to precipitation.	Relocate		M
		Open dumpster containing aluminum shavings; shavings have washed onto ground.	Correct/Inspect/Prevent		M

(1) H - High
M - Medium
L - Low

TABLE 6.17

STORM WATER MANAGEMENT IN DRAINAGE AREA 17

Facility of Concern	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Photo ID No.	Priority[1]
Warehouse Supply and Equipment	2059	UST fill pipe inadequately marked; no protection from vehicles; tire track observed near pipe.	Correct/Inspect/Prevent	DA17-1	M
Aircraft General Purpose	2075	Hydraulic fluid observed leaking from equipment in rear of building; drains to wetlands.	Correct/Inspect/Prevent		H
Jet Engine Maintenance	2076	Stains due to spills/leaks around base of covered mechanical equipment.	Correct/Inspect/Prevent		L
		Painting equipment (pans, rollers, etc.) exposed to precipitation; paint waste drums and unlabeled drums stored outside.	Relocate		M

(1) H - High
M - Medium
L - Low

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TABLE 6.18

STORM WATER MANAGEMENT IN DRAINAGE AREA 18

Facility of Concern	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Photo ID No.	Priority
		No Facilities of Concern Identified in Drainage Area 18			

SECTION 7
STORM WATER POLLUTION PREVENTION PLAN IMPLEMENTATION

Implementation of the SWPPP is a required component of the State of Georgia General Permit to discharge storm water associated with industrial activity. Pursuant to Part IV A-1, the SWPPP "shall provide for implementation and compliance with the terms of the Plan."

Implementation of the SWPPP is comprised of two major activities:

- effecting recommended improvements; and
- monitoring Base operations for compliance with the SWPPP.

This section describes these two activities and details the specific components of each activity.

7.1 FACILITY IMPROVEMENTS

In Section 6, recommended improvements to reduce the risk of storm water contamination were identified by drainage area. Buildings or areas where industrial activity had a potential to contaminate storm water were designated a "Facility of Concern." Upon reviewing the industrial activity and the risk of contamination, recommended improvements for each Facility of Concern were assigned a qualitative ranking of "Low", "Moderate" or "High" commensurate with its potential to reduce the associated risk of contamination. "High" priority improvements are those that would significantly reduce the risk of storm water contamination. "Moderate" and "Low" priority improvements are those that would also reduce the risk of storm water contamination although less significantly than "High" priority recommendations. Since the purpose of the SWPPP is to reduce the potential for storm water contamination, "High" priority recommendations should be implemented first, followed by "Moderate" priority, then "Low" priority. Tables 7.1 through 7.3 group the recommendations presented in Section 6 by priority and establish target dates for implementing the recommended improvement. Also identified is the action party responsible for implementing the recommended improvement.

Furthermore, Table 7.4 lists upcoming storm water related projects scheduled by RAFB in an effort to continually improve the water quality of storm water discharge.

TABLE 7.1
HIGH PRIORITY CONTAMINATION REDUCTION MEASURES

Dr. Area	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Implementation Target Date	Responsible Party
2	1602/1603	Valve in AST dike is left open. Tank is leaking and water/diesel fuel flow to storm ditch.	Correct/Inspect/Prevent	31 May 94	
		Drum of motor oil used to serve cardboard compaction machine at southeast corner of DRMO complex has drip bucket located under spigot that is full and overflowing onto ground; no secondary containment.	Correct/Inspect/Prevent	31 May 94	
3	655/656	Berm valve at washrack left open to drain rainwater.	Correct/Inspect/Prevent	31 May 94	
		Antifreeze drip pan filled to capacity.	Correct/Inspect/Prevent	31 May 94	
	949	Oil/water waste effluent pipe from generator discharges into floor drain. (Floor drain has unknown discharge location.)	Additional Study	31 May 94	
	985	Shop generator is leaking oil to pavement.	Correct/Inspect/Prevent	31 May 94	
		OWS discharges to storm drain; OWS is fed by storm inlet that drains car maintenance and car painting area.	Additional Study	31 May 94	
		Large portion of shop lot drains directly to storm ditch.	Containment	31 May 94	
		Evidence that paint had been poured into storm drain.	Correct/Inspect/Prevent	31 May 94	
	988	Flow in inlet located approximately 150 feet north of Eleventh Street.	Additional Study	31 May 94	
	1178	Sewage holding tanks ("Handi-John") connected to trailers were overflowing onto ground. Trailers located north of Luna Lake.	Correct/Inspect/Prevent	31 May 94	

TABLE 7.1 (Continued)
HIGH PRIORITY CONTAMINATION REDUCTION MEASURES

Dr. Area	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Implementation Target Date	Responsible Party
3 (Cont'd)	1351	There are numerous transformers mounted on concrete pads around perimeter of facility; oil was leaking from transformers onto pads and onto ground; these transformers were located at east and west ends of compound, just outside the fence.	Correct/Inspect/Prevent	31 May 94	
	1364	OWS appears to be fed by uncovered waste pit at outdoor vehicle wash bays; the separator appears to discharge to detention basin east of the facility parking lot and ultimately to Scout Lake.	Additional Study	31 May 94	
	1550	Several gallons of paint spilled on ground; (spilled/dumped by contractor constructing new building.)	Correct/Inspect/Prevent	31 May 94	
4	270	Valve in Chemical Site No. 24 berm is left open; drainage is to storm ditch.	Correct/Inspect/Prevent	31 May 94	
		Air compressor is leaking oil onto pavement.	Correct/Inspect/Prevent	31 May 94	
	286/292	Pans containing cleaning/degreasing compound drums are filled with liquid.	Correct/Inspect/Prevent	31 May 94	
	294	Equipment is leaking oil.	Correct/Inspect/Prevent	31 May 94	
		Hydraulic fluid draining into storm inlet during equipment maintenance.	Correct/Inspect/Prevent	31 May 94	
		Unlabeled drums exposed to precipitation; containment pans are filled to capacity; drums are located at wash station south of Building 294.	Correct/Inspect/Prevent	31 May 94	

TABLE 7.1 (Continued)

HIGH PRIORITY CONTAMINATION REDUCTION MEASURES

Dr. Area	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Implementation Target Date	Responsible Party
4 (Cont'd)	333	Petroleum product leaking from piece of mobile equipment resting on jack; location is approximately 300 feet east-northeast of Building 333.	Correct/Inspect/Prevent	31 May 94	
	603	Air compressor waste oil/water collection drum on rack is leaking oil to ground; stained soils were noted during investigation.	Remove/Dispose	31 May 94	
	614	Berm has unvalved drainage pipe; rainwater washes spilled materials to storm drain which discharges to storm ditch.	Correct/Inspect/Prevent	31 May 94	
	635	A three-inch pipe emerges from east wall of Bldg. 635 and runs over asphalt to storm inlet; pipe connects to sink in break area.	Correct/Inspect/Prevent	31 May 94	
		A two-inch pipe emerges from north wall of Bldg. 635 (Machine Shop); pipe discharges cooling water from a welding machine onto the asphalt; water flows northeast to nearby storm inlet.	Correct/Inspect/Prevent	31 May 94	
	640	Rusted AST with leakage.	Correct/Inspect/Prevent	31 May 94	
		Air compressor is leaking oil to pavement.	Correct/Inspect/Prevent	31 May 94	
	641	Six-inch yellow pipe emerges from back wall of Bldg. 641; end of pipe hangs 2 feet above storm inlet.	Correct/Inspect/Prevent	31 May 94	
	642	Flow in inlet at northeast corner of Bldg. 642.	Additional Study	31 May 94	

TABLE 7.1 (Continued)

HIGH PRIORITY CONTAMINATION REDUCTION MEASURES

Dr. Area	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Implementation Target Date	Responsible Party
6	317	Tarps on ground used for truck maintenance by cafeteria dumpster contractor; tarps and adjacent ground covered with oil.	Remove/Dispose	31 May 94	
7	158	Vacuum pumps leaking oil; drip pans are not in place for all pumps.	Correct/Inspect/Prevent	31 May 94	
	158	Flow in inlet E of Bldg. 158.	Additional Study	31 May 94	
	162	Steady flow of hot water from the south (12" pipe) into manhole NE of Bldg. 162.	Additional Study	31 May 94	
	163	Flow into manhole SE of Bldg. 163 from west.	Additional Study	31 May 94	
	165	Flow in inlet located between NW corner of building and Byron Street.	Additional Study	31 May 94	
		Flow in manhole S of Bldg. 165 from west.	Additional Study	31 May 94	
	165	Spills on ground from paint spraying machine operated by painting contractor.	Correct/Inspect/Prevent	31 May 94	
	166	Cafeteria employees dumping floor wash water into storm inlet; odor of disinfectant coming from water.	Correct/Inspect/Prevent	31 May 94	
		Disposed wash water flowing from area of door on south side of cafeteria toward storm inlet on Byron Street.	Correct/Inspect/Prevent	31 May 94	
	169	Hot air and odor in storm inlet on west side of Milledgeville Street SE of Bldg. 169.	Additional Study	31 May 94	
		Flow into manhole NE of Bldg. 169 from SW (15" pipe); source appears to be Bldg. 169.	Additional Study	31 May 94	

TABLE 7.1 (Continued)
HIGH PRIORITY CONTAMINATION REDUCTION MEASURES

Dr. Area	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Implementation Target Date	Responsible Party
7 (Cont'd)		Possible connection from floor drains inside Bldg. 169 to storm water inlet SE of Bldg. 169.	Additional Study	31 May 94	
		Flow from south into inlet from pipe below 10" pipe.	Additional Study	31 May 94	
	171	Berm valve open at Chemical Site No. 4; spill would discharge to storm drain; no spill containment equipment on site.	Correct/Inspect/Prevent	31 May 94	
	173	Small pipe that emerges from building wall discharging clear liquid that foamed when agitated.	Correct/Inspect/Prevent	31 May 94	
		Black discharge from 3" dia. pipe emerging from wall on southside of Bldg. 173.	Additional Study	31 May 94	
		Small black hose discharging liquid onto ground in picnic area.	Correct/Inspect/Prevent	31 May 94	
	177	Strong steady flow into inlet E of Bldg. 177 from south in 6" pipe; may originate from cooling tower(s).	Additional Study	31 May 94	
	180	Dumpster containing numerous crushed paint cans overturned on asphalt; paint residue from cans flowing into storm inlet.	Correct/Inspect/Prevent	31 May 94	
	181	Petroleum and paint wastes from floor drain filters are disposed of in dumpster.	Correct/Inspect/Prevent	31 May 94	
		Wash water flows from building, down ramp to storm sewer; wash water is contaminated with cleaning compounds, PD850, petroleum, and paint waste/chips.	Correct/Inspect/Prevent	31 May 94	

TABLE 7.1 (Continued)
HIGH PRIORITY CONTAMINATION REDUCTION MEASURES

Dr. Area	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Implementation Target Date	Responsible Party
7 (Cont'd)		Greenish water leaking slowly from crack at base of building wall at north end of building.	Correct/Inspect/Prevent	31 May 94	
	195	Water flowing in inlet located just outside of dike N of Bldg. 195.	Additional Study	31 May 94	
	206	Large DF-2 AST area is diked but has storm inlet in diked area; AST valve leaking.	Correct/Inspect/Prevent	31 May 94	
	220	Flow into inlet located northeast of Bldg. 220.	Additional Study	31 May 94	
	305	OWS in vehicle wash stall discharges to storm inlet on east side of facility; sheen on water entering storm inlet from OWS.	Additional Study	31 May 94	
	318	Garbage truck dripping liquid residue onto ground.	Correct/Inspect/Prevent	31 May 94	
		Shredded paper on ground.	Correct/Inspect/Prevent	31 May 94	
		OWS/wash rack area lacking maintenance.	Correct/Inspect/Prevent	31 May 94	
	319	Very thick layer of oil and grease at top of OWS at steam wash pad; O/W separator filled to capacity; observed green fluid backing up out of steam clean drain that feeds OWS.	Correct/Inspect/Prevent	31 May 94	
		6-in berm at steam clean and wash rack area is not containing wash water; observed oily water escaping from area to storm inlet.	Containment	31 May 94	
		Drain at washrack backs up.	Correct/Inspect/Prevent	31 May 94	

TABLE 7.1 (Continued)

HIGH PRIORITY CONTAMINATION REDUCTION MEASURES

Dr. Area	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Implementation Target Date	Responsible Party
7 (Cont'd)	360/361	Dumpsters outside of compound contained drums, buckets of paint and adhesive remover; paint spills on grass; dumpsters were leaking liquid to grass; area drains to storm water ditch.	Remove/Dispose	31 May 94	
		Sheen on standing water and on water leaking from empty drums.	Correct/Inspect/Prevent	31 May 94	
	Taxiway 1A	Strong flow from southwest (possibly from inlet south of Building 209); also flow from south into inlet located south of curved dike that is south of Taxiway 1A.	Additional Study	31 May 94	
9	104	Strong fuel odor and steady flow from west in manhole on east side of Bldg. 104.	Additional Study	31 May 94	
	110	Strong flow into inlet from northwest; strong fuel odor; inlet is 300 feet south of Bldg. 110.	Additional Study	31 May 94	
	114	20 to 30 fluid collection pans stored on pavement under jet engines, covered by tent; numerous stains on pavement in this area.	Correct/Inspect/Prevent	31 May 94	
	121	Flow in manhole located east of Bldg. 121.	Additional Study	31 May 94	
	125	Milky fluid, probably from floor cleaning machine, flowing over asphalt into strip drain connected to storm sewer on east side of Building 125.	Correct/Inspect/Prevent	31 May 94	
		Milky fluid with disinfectant odor on pavement next to north wall of Building 125.	Correct/Inspect/Prevent	31 May 94	

TABLE 7.1 (Continued)
HIGH PRIORITY CONTAMINATION REDUCTION MEASURES

Dr. Area	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Implementation Target Date	Responsible Party
9 (Cont'd)		Small flow into manhole near southeast corner of Bldg. 125, adjacent to south wall.	Additional Study	31 May 94	
	127	Observed brown liquid discharging from pipe emerging from south wall of Bldg. 127 for 5 minutes; discharge flowed over asphalt to storm inlet. See Photograph DA9-1 in Appendix G.	Correct/Inspect/Prevent	31 May 94	
		Several trucks with hydraulic lift platforms leaking hydraulic fluid onto pavement; trucks parked on south side of Building 127 inside fence.	Correct/Inspect/Prevent	31 May 94	
	130	Steady flow in inlet, 50 feet north of Bldg. 130, from east to north.	Additional Study	31 May 94	
	140	Non-contact cooling water from furnaces is discharged through 6-inch pipe into manhole at northeast corner of north wing of Bldg. 140.	Correct/Inspect/Prevent	31 May 94	
		Metal shavings in bins placed adjacent to storm inlet at northeast corner of east wing of Building 140; lubricant used for metal cutting is running into storm inlet.	Remove/Dispose	31 May 94	
	141	Above-ground pipe from industrial waste process equipment discharges into storm inlet located west of Bldg. 141. See Photograph DA9-2 in Appendis G.	Correct/Inspect/Prevent	31 May 94	
	142	Floor wash water flows to storm drains.	Correct/Inspect/Prevent	31 May 94	
		Scrap metal in bins with machine coolant leaking to ground; storm inlet approximately 15 ft downslope.	Remove/Dispose	31 May 94	

TABLE 7.1 (Continued)
HIGH PRIORITY CONTAMINATION REDUCTION MEASURES

Dr. Area	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Implementation Target Date	Responsible Party
9 (Cont'd)		Dust collectors from blasting operations scatter fine dust and debris on ground; debris contains aluminum oxide, walnut hull, and glass beads.	Correct/Inspect/Prevent	31 May 94	
		Storm inlet on east side of building is covered with plastic sheet to prevent entry of cyanide waste overflowing from building.	Correct/Inspect/Prevent	31 May 94	
	147	Drip pans placed under pipes connected to pumps; liquid overflows onto ground during storm.	Correct/Inspect/Prevent	31 May 94	
		Pipe leads directly to storm water drain; has a valve to control flow of "treated" waste water to storm drain.	Correct/Inspect/Prevent	31 May 94	
	148	Oily wash water and equipment fluids escaping wash rack; flow directly to storm inlet.	Containment	31 May 94	
	150	Battery acid runs across sloped floor and through back door onto ground.	Correct/Inspect/Prevent	31 May 94	
	209	Steady flow from northwest (66" line) into manhole located 150 feet south of Bldg. 209; strong fuel odor.	Additional Study	31 May 94	
	Air Freight Apron	Strong fuel odor in inlets on 48" east/west sewer line on Air Freight Apron, near junction with Taxiway 1B; liquid dripping into one inlet through cracks in sidewall.	Additional Study	31 May 94	
	North Operational Apron	Steady flow of fluid into underground box; box is located on apron 500 feet east of Bldg. 44; discharge flows west to storm inlet; see Photograph DA9-3 in Appendix G.	Additional Study	31 May 94	

TABLE 7.1 (Continued)

HIGH PRIORITY CONTAMINATION REDUCTION MEASURES

Dr. Area	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Implementation Target Date	Responsible Party
14	Pad 8	Drum of cleaning compound leaking product from spigot onto pavement.	Correct/Inspect/Prevent	31 May 94	
		OWS is releasing petroleum products into swale.	Correct/Inspect/Prevent	31 May 94	
		Wash water from KGM washrack escapes berm.	Containment	31 May 94	
		Plug is removed from dumpster; oily waste is discharging onto ground.	Correct/Inspect/Prevent	31 May 94	
		OWS is releasing petroleum products into nearby swale.	Correct/Inspect/Prevent	31 May 94	
	27	Retention pond with numerous dead frogs; pond is fed by pipes from Bldg. 131 and building to south.	Additional Study	31 May 94	
	45	Generator is leaking oil onto pavement.	Correct/Inspect/Prevent	31 May 94	
	49	Fuel leaking or spilled from mobile equipment.	Correct/Inspect/Prevent	31 May 94	
	51	Fuel leaking from mobile equipment and flowing into storm inlet.	Correct/Inspect/Prevent	31 May 94	
	53	Flow in inlet S of Bldg. 53; suspect Bldg. 53.	Additional Study	31 May 94	
	54	Strong fuel odor in inlet SE of Bldg. 54; odor dissipated over time.	Additional Study	31 May 94	
	89	Valve in berm found open and draining to concrete.	Correct/Inspect/Prevent	31 May 94	
		Fluid leaking from machinery has stained concrete pad and killed grass; absorbent pellets have been placed below one piece of equipment.	Correct/Inspect/Prevent	31 May 94	

TABLE 7.1 (Continued)

HIGH PRIORITY CONTAMINATION REDUCTION MEASURES

Dr. Area	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Implementation Target Date	Responsible Party
14 (Cont'd)	131	Hydraulic test stands leak hydraulic oil to pavement; spills migrate to storm drain.	Containment	31 May 94	
	207	Flow into inlet at northwest corner of Bldg. 207.	Additional Study	31 May 94	
		Milky fluid flowing into inlet at southeast corner of Bldg. 207.	Additional Study	31 May 94	
	214	Flow into inlet located east of south end of Bldg. 214.	Additional Study	31 May 94	
	215	Flow into inlet near SW corner of Bldg. 215 through 6-inch pipe from Bldg. 215.	Correct/Inspect/Prevent	31 May 94	
15	2072	Rain water entering AST berm area drains out to grass; valve is left open.	Correct/Inspect/Prevent	31 May 94	
	2082	Oily substance leaking from base of dumpster.	Correct/Inspect/Prevent	31 May 94	
		Oil leaking onto asphalt parking from mobile equipment (NW of Building 2082).	Correct/Inspect/Prevent	31 May 94	
16	2079	Spills of lube oil observed in temporary storage shed; oil flowing out of door onto ground.	Correct/Inspect/Prevent	31 May 94	
	2079	Small flow into inlet on south side of Mitchell Place south of Bldg. 2079; strong fuel odor in inlet.	Additional Study	31 May 94	
17	2075	Hydraulic fluid observed leaking from equipment in rear of building; drains to wetlands.	Correct/Inspect/Prevent	31 May 94	

TABLE 7.2

MODERATE PRIORITY CONTAMINATION REDUCTION MEASURES

Dr. Area	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Implementation Target Date	Responsible Party
1	Prime Beef Training	8 unlabelled drums strapped to pallet resting on ground; no secondary containment.	Relocate	31 August 94	
2	1601	Chemical drums are stacked in such a manner that they hang over berm.	Relocate	31 August 94	
	1602	Suds and milky suspension in standing water in manhole adjacent to east face of Building 1602.	Additional Study	31 August 94	
	1602/1603	Berm in petroleum waste storage area is cracked. Oil spills are evident on pavement; oil/water will flow through cracks to storm ditch during rain events.	Containment	31 August 94	
		Seven pallets of lead-acid batteries are exposed to precipitation; no secondary containment.	Relocate	31 August 94	
		Scrap metal and parts contaminated with oil are stored in un-roofed concrete storage bays; during rain events oil is washed out of bays into storm inlets that discharge to storm ditch; (black residue was noted in ditch prior to new construction which replaced ditch with underground collection system.)	Containment	31 August 94	
		Hazardous material drums adjacent to Building 1603 (one containing suspect PCBs) stored without secondary containment approximately two feet from storm drain; drum lids are not secure.	Containment	31 August 94	

TABLE 7.2 (Continued)

MODERATE PRIORITY CONTAMINATION REDUCTION MEASURES

Dr. Area	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Implementation Target Date	Responsible Party
3	922	Waste antifreeze drums stored outside building without secondary containment; one drum lid was not secure.	Remove/Dispose	31 August 94	
		Waste oil spills around waste oil UST funnel. (Waste oil UST is for general use.)	Containment	31 August 94	
		Berm in gas station lot has gaps that permit runoff to reach grass field.	Containment	31 August 94	
	985	Section missing from washrack berm; wash water contaminated with oil and degreaser can escape bermed area and flow to storm ditch.	Containment	31 August 94	
		Drums stored outside of bermed area at Chemical Site No. 55.	Relocate	31 August 94	
	1348	Approximately 40 green Enviropac containers, previously used to store granular sorbent contaminated with spill waste such as JP-4, are stored on ground with no cover and no secondary containment; containers are currently empty.	Relocate	31 August 94	
	1364	Various drums, with contents including diesel and MOGAS resting directly on pavement with no secondary containment; drainage is to detention basin, followed by OWS, followed by Scout Lake.		31 August 94	
	1549	Drums stored outside of chemical area.	Relocate	31 August 94	
	1550	55-gal drum of sealer and open cans of oily fluid stored on asphalt by contractor without secondary containment.	Relocate	31 August 94	
4	269	Drum labeled as hazardous material is exposed to precipitation; no containment.	Relocate	31 August 94	

TABLE 7.2 (Continued)

MODERATE PRIORITY CONTAMINATION REDUCTION MEASURES

Dr. Area	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Implementation Target Date	Responsible Party
4 (Cont'd)	272/275	Dumpster with no top contains disposed paint cans.	Remove/Dispose	31 August 94	
		Improper waste paint and bucket storage; paint buckets, many still containing paint, stored on concrete.	Remove/Dispose	31 August 94	
		Chemical drums stored without secondary containment in parking lot.	Relocate	31 August 94	
	286/292	Sediment trap is filled with debris; possibility of oil-contaminated water discharging into storm drain if sediment trap backs up.	Correct/Inspect/Prevent	31 August 94	
	288	Inlet to NW of Bldg. 288 almost completely covered with excavated material.	Correct/Inspect/Prevent	31 August 94	
	294	Employees indicated that they have not received training.	Correct/Inspect/Prevent	31 August 94	
		Waste oil drums are disarranged within an approximate two-inch berm; berm noted in poor condition and may not be effective in the event of a release.	Containment	31 August 94	
	333	Inlet at SE corner of Bldg. 333 is filled with sediment.	Correct/Inspect/Prevent	31 August 94	
		Inlet located 200 feet north-northeast of Bldg. 333 is covered with gravel and sand.	Correct/Inspect/Prevent	31 August 94	
	340	Cracks in floor and gaps in expansion joints inside building; spill could escape through cracks to storm water.	Containment	31 August 94	
	364	Inlet located 150 feet north of NE corner of Bldg. 364 is filled with debris.	Correct/Inspect/Prevent	31 August 94	
		Inlet located 75 feet NE of SE corner of Bldg. 364 is covered with debris.	Correct/Inspect/Prevent	31 August 94	

TABLE 7.2 (Continued)

MODERATE PRIORITY CONTAMINATION REDUCTION MEASURES

Dr. Area	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Implementation Target Date	Responsible Party
4 (Cont'd)	380	Numerous inlets between Bldgs. 380 and 385 are covered with gravel and grass.	Correct/Inspect/Prevent	31 August 94	
		Spills/leaks from trucks with mounted machinery parked south of Building 380.	Correct/Inspect/Prevent	31 August 94	
	606	AST has no secondary containment and is leaking diesel fuel to concrete pad and soil.	Containment	31 August 94	
	608	55 gal. waste oil collection drum stored outside on rack with no secondary containment.	Relocate	31 August 94	
	614	Chemical drums at Chemical Site No. 19 are disarranged; drip pans are not in place; contaminated absorbant pads and rags are scattered throughout the area and improperly stored in plastic bags.	Correct/Inspect/Prevent	31 August 94	
		Waste collection drum at steam generator has no secondary containment; stained soils were noted during investigation.	Containment	31 August 94	
	630	Drums stored with no secondary containment on west side of Bldg. 630. One drum labeled as beryllium oxide.	Relocate	31 August 94	
	636	Some drums in chemical storage area are exposed to precipitation and are stored outside containment.	Relocate	31 August 94	
		Hazardous materials stored outside without secondary containment; drainage to storm ditch.	Relocate	31 August 94	
	640	Beryllium oxide drums stored outside on pavement without secondary containment.	Relocate	31 August 94	

TABLE 7.2 (Continued)

MODERATE PRIORITY CONTAMINATION REDUCTION MEASURES

Dr. Area	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Implementation Target Date	Responsible Party
4 (Cont'd)	641	Unlabeled drum on loading dock on west side of building exposed to precipitation; no secondary containment.	Relocate	31 August 94	
	644	Two large ASTs with no secondary containment; loading spill would be difficult to control considering proximity to storm drains.	Containment	31 August 94	
	645	Beryllium oxide drums stored outside on pallets without secondary containment; lids not secure on all drums.	Relocate	31 August 94	
	646	Oil sheen on water in ditch 150 feet northeast of Bldg. 646.	Additional Study	31 August 94	
6	301	Storm inlets filled with sand at southeast corner of Bldg. 301.	Correct/Inspect/Prevent	31 August 94	
	317	Approximately 6 automotive batteries stored on ground, exposed to precipitation.	Relocate	31 August 94	
	353	AST with no secondary containment.	Containment	31 August 94	
		Exterior of AST is rusted.	Correct/Inspect/Prevent	31 August 94	
	354	Racks with drums in Chemical Site No. 6 extend beyond secondary containment.	Relocate	31 August 94	
		Culvert located northwest of Bldg. 354 is filled with sediment.	Correct/Inspect/Prevent	31 August 94	
		Inlet 200 feet south of Bldg. 354 is filled with sediment.	Correct/Inspect/Prevent	31 August 94	
	369	4 Enviropacs (metal containers used for storage of recovered waste from spills) resting on ground.	Relocate	31 August 94	
	393	Inlet 150 feet north of Bldg. 393 is filled with sediment.	Correct/Inspect/Prevent	31 August 94	

TABLE 7.2 (Continued)

MODERATE PRIORITY CONTAMINATION REDUCTION MEASURES

Dr. Area	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Implementation Target Date	Responsible Party
7	73	Oily sheen on water in inlet inside dike NE of Bldg. 73.	Additional Study	31 August 94	
	158	5-gal acetone cans stored on grass in proximity (4 feet) to storm drain; cans still contain product; cans are not rinsed; disposed of in dumpster.	Remove/Dispose	31 August 94	
	165	Two drums of hazardous waste stored on ground; one of the drum labels indicates contents are lead paint chips.	Relocate	31 August 94	
		Dumpster outside contains several 5 gal chemical cans.	Correct/Inspect/Prevent	31 August 94	
		No spill equipment available for outdoor chemical storage.	Correct/Inspect/Prevent	31 August 94	
	169	Flow into manhole NE of Bldg. 169 from SW (15" pipe); source appears to be Bldg. 169.	Correct/Inspect/Prevent	31 August 94	
	173	Battery filling station is exposed to precipitation; no secondary containment.	Relocate	31 August 94	
	180	Greasy aircraft parts parked outside on dollies with no temporary cover.	Relocate Correct/Inspect/Prevent	31 August 94	
		Numerous paint buckets with flammable symbols stored outside on pallets. (May have been moved there temporarily for floor refinishing.)		31 August 94	
		Multiple paint spills and unknown material spills throughout area.		31 August 94	
	181	Cleaning compounds and solvents are stored outdoors without secondary containment.	Relocate	31 August 94	
	183	Concrete pad supporting diesel-powered generator is heavily stained.	Correct/Inspect/Prevent	31 August 94	

TABLE 7.2 (Continued)

MODERATE PRIORITY CONTAMINATION REDUCTION MEASURES

Dr. Area	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Implementation Target Date	Responsible Party
7 (Cont'd)		Battery too close to edge of cover.	Relocate	31 August 94	
	190	Stains on soil near used oil tank. Used oil tank overhanging secondary containment.	Containment	31 August 94	
	195	Oily residue and oily odor in dry storm inlet W of Bldg. 195.	Additional Study	31 August 94	
		Storm inlet outside dike is covered with debris N of Bldg. 195.	Correct/Inspect/Prevent	31 August 94	
		Oily sheen on water in inlet inside dike N of Bldg. 195.	Additional Study	31 August 94	
	196	Hole in containment curb at pumping pad.	Containment	31 August 94	
		Petroleum drum without containment next to AST containment dike; exposed to precipitation.	Relocate	31 August 94	
	197	Drums overhang secondary containment; inadequate drip pan.	Containment	31 August 94	
	308	Storm inlet filled with debris.	Correct/Inspect/Prevent	31 August 94	
		AST containing antifreeze leaks at valve. Drip pans may fill during rain events and overflow to storm sewer; inadequate secondary containment.	Correct/Inspect/Prevent	31 August 94	
	309	Drum labelled as combustible liquid is stored on loading dock with no secondary containment.	Relocate	31 August 94	
	315	Inlet located 200 feet SE of Bldg. 315 is filled with debris.	Correct/Inspect/Prevent	31 August 94	
	319	Batteries stored on pavement, exposed to precipitation.	Relocate	31 August 94	
	360/361	Chemical spills due to puncture of drums by fork lift.	Correct/Inspect/Prevent	31 August 94	

TABLE 7.2 (Continued)

MODERATE PRIORITY CONTAMINATION REDUCTION MEASURES

Dr. Area	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Implementation Target Date	Responsible Party
7 (Cont'd)		Manager not sure whether employees have received training.	Correct/Inspect/Prevent	31 August 94	
		Insufficient quantities of spill equipment and absorbent material.	Correct/Inspect/Prevent	31 August 94	
		Drums of environmental waste are staged outside on pavement for sampling, overpacking, etc.; no secondary containment for the staging area.	Relocate	31 August 94	
	371	Drums containing liquid from monitoring wells are exposed to precipitation; located at edge of landfill, across ditch from sewage treatment plant.	Relocate	31 August 94	
	227	No secondary containment for AST.	Containment	31 August 94	
9	111	Greasy film on water in small inlet at southwest corner of passenger terminal.	Additional Study	31 August 94	
	113	Greenish standing water adjacent to tanks located east of Bldg. 113.	Additional Study	31 August 94	
	125	Significant spill site caused by improper procedures.	Correct/Inspect/Prevent	31 August 94	
	127	Observed brown liquid discharging from pipe emerging from south wall of Bldg. 127 for 5 minutes; discharge flowed over asphalt to storm inlet. See Photograph DA9-1 in Appendix G.	Additional Study	31 August 94	
	140	No emergency response equipment/materials at Chemical Site No. 1.	Correct/Inspect/Prevent	31 August 94	
	141	Flammable liquid cabinets placed within 5 feet of storm inlet; any spills/leaks from cabinets would enter inlet.	Relocate	31 August 94	

TABLE 7.2 (Continued)

MODERATE PRIORITY CONTAMINATION REDUCTION MEASURES

Dr. Area	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Implementation Target Date	Responsible Party
9 (Cont'd)	141	Strong fuel odor in storm inlet located west of Bldg. 141.	Additional Study	31 August 94	
	142	Inlet near southeast corner of building is filled with sand.	Correct/Inspect/Prevent	31 August 94	
		Triple rinsed drums of 1,1,1-trichloroethane turned upside down to drain on pavement, sloping to storm drain.	Correct/Inspect/Prevent	31 August 94	
	143	Materials stored outside without secondary containment; no spill equipment within easy access.	Relocate	31 August 94	
	147	No secondary containment for hazardous waste tank; evidence of leaks under tank which flow to storm inlets.	Containment	31 August 94	
		Evidence of leakage at pH basin. Drainage flows to storm inlet.	Containment	31 August 94	
		Use of untreated water to wash off pumps (with phenol in water).	Correct/Inspect/Prevent	31 August 94	
	148	Drums stored on pallets with no secondary containment.	Relocate	31 August 94	
10	40	No spill equipment stored onsite at Chemical Site No. 47.	Correct/Inspect/Prevent	31 August 94	
12	2086	Dumpster with fuel smell.	Correct/Inspect/Prevent	31 August 94	
		Brownish water with oily film flowing from culvert.	Additional Study	31 August 94	
14	Pad 9	Thick paint residue on asphalt in sand blasting yard at Pad 9, approximately 400 ft west of Building 33.	Remove/Dispose	31 August 94	
	2	2 ASTs containing fuel are exposed to precipitation and have no secondary containment.	Containment	31 August 94	
	45	Fuel recovery unit berm is cracked.	Containment	31 August 94	

TABLE 7.2 (Continued)

MODERATE PRIORITY CONTAMINATION REDUCTION MEASURES

Dr. Area	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Implementation Target Date	Responsible Party
14 (Cont'd)	49	Fuel odor in storm inlet NE of Bldg. 49.	Additional Study	31 August 94	
	54	Drums labeled as "Hazardous Waste" stored on concrete pad without containment, adjacent to strip drain; label indicates that drums contain waste paint.	Remove/Dispose	31 August 94	
	56	Heavily stained ground near fill pipes for USTs.	Correct/Inspect/Prevent	31 August 94	
	58	Gasoline AST with no secondary containment.	Containment	31 August 94	
	89	Four roll-off containers used for storage of hazardous waste (paint and related products); due to poor tarp condition/installation, precipitation is entering containers.	Correct/Inspect/Prevent	31 August 94	
		Rusty dumpster with no top contains cans with chemical residues; dumpster has chemical odor.	Correct/Inspect/Prevent	31 August 94	
		Trash cans, bucket, and brush resting on dollies parked over strip drain; bucket contains amber colored fluid; paint spills on concrete next to drain.	Correct/Inspect/Prevent	31 August 94	
	2052	Dumpster with fuel odor.	Correct/Inspect/Prevent	31 August 94	
	2066	Containers of mineral spirits and paint stored outside on asphalt, exposed to precipitation.	Relocate	31 August 94	
15	2070	Hole in AST berm where valve is missing; rain water drains to grass.	Correct/Inspect/Prevent	31 August 94	
	2071	Oily film on water in inlet 100 ft S of Bldg. 2071.	Additional Study	31 August 94	
	2077	Dumpster with fuel odor.	Correct/Inspect/Prevent	31 August 94	

TABLE 7.2 (Continued)

MODERATE PRIORITY CONTAMINATION REDUCTION MEASURES

Dr. Area	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Implementation Target Date	Responsible Party
15 (Cont'd)	2082	Strong petroleum odor in storm water inlet 250 ft N of Bldg. 2082 N of Borghese Drive.	Additional Study	31 August 94	
16	2078	Containers of paint and mineral spirits are open and exposed to precipitation.	Relocate	31 August 94	
		Oily film in inlet S of Bldg. 2078.	Additional Study	31 August 94	
		Soil erosion from construction activity is causing sediment to enter storm water inlet SW of Bldg. 2078.	Correct/Inspect/Prevent	31 August 94	
		Oily film in storm water inlet E of Bldg. 2078.	Additional Study	31 August 94	
	2079	Oil film on water in inlet at intersection of Borghese Drive and Mitchell Place, W of Bldg. 2079.	Additional Study	31 August 94	
		Wash rack and OWS are inactive, used only to wash cars; OWS is not being serviced. Effluent routing unknown.	Additional Study	31 August 94	
		Oil drum and fuel container exposed to precipitation.	Relocate	31 August 94	
		Open dumpster containing aluminum shavings; shavings have washed onto ground.	Correct/Inspect/Prevent	31 August 94	
	2083	Oily film in storm water inlet 100 ft E of Bldg. 2083.	Additional Study	31 August 94	
17	2059	UST fill pipe inadequately marked; no protection from vehicles; tire track observed near pipe.	Correct/Inspect/Prevent	31 August 94	
	2059	Silt in ditch downstream of ongoing construction activities.	Correct/Inspect/Prevent	31 August 94	
17 (Cont'd)	2076	Painting equipment (pans, rollers, etc.) exposed to precipitation; paint waste drums and unlabeled drums stored outside.	Relocate	31 August 94	

TABLE 7.3

LOW PRIORITY CONTAMINATION REDUCTION MEASURES

Dr. Area	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Implementation Target Date	Responsible Party
2	1602/1603	OWS functions as catch basin for bermed area where waste-oil drums and electrical transformers are stored; if OWS fills during consecutive storms, overflow will spill into adjacent storm/sewer box.	Additional Study	30 November 94	
3	1351	Two brown cabinets, labeled "FLAMMABLE" are located inside fence east of Building 1351; There is dead, stained grass with an oily odor due to a leak from the cabinets.	Correct/Inspect/Prevent	30 November 94	
	1549	Drum rinse pad in front of shop drains to two 800-gal tanks. If pesticide rinseate is allowed to continue to pool, it could overflow to storm ditches.	Additional Study	30 November 94	
4	272/275	Numerous paint spills on asphalt from paint trailers; drainage to storm inlet.	Correct/Inspect/Prevent	30 November 94	
	376	Unloading area for hazardous materials; no containment; no spill equipment; drums transported by forklift across busy road.	Containment	30 November 94	
		Loading spill at AST would be difficult to contain and would flow to storm inlet.	Containment	30 November 94	
	385	Four storm inlets W of Bldg. 385 are covered with aggregate.	Correct/Inspect/Prevent	30 November 94	
	701	Loading spill at AST would be difficult to contain and would flow to storm inlet.	Containment	30 November 94	

TABLE 7.3 (Continued)

LOW PRIORITY CONTAMINATION REDUCTION MEASURES

Dr. Area	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Implementation Target Date	Responsible Party
6	226	UST fuel loading spill has potential to reach nearby storm drain.	Containment	30 November 94	
	354	Stains from dumpster leading to storm drain.	Correct/Inspect/Prevent	30 November 94	
7	169	Debris on storm grate; dumpster placed almost over top of inlet.	Correct/Inspect/Prevent	30 November 94	
		Dark stain on ground and concrete pad next to pipe; pad supports 4 ASTs.	Correct/Inspect/Prevent	30 November 94	
	319	Two drums (one rusty) stored on asphalt next to steam wash pad; no secondary containment.	Relocate	30 November 94	
9	125	Two containers of alkaline are exposed to precipitation; data sheet indicates that chemical is hazardous.	Relocate	30 November 94	
	149	Significant spill site from ruptured industrial waste line (cut by lawn mower).	Correct/Inspect/Prevent	30 November 94	
12	98	Inlets NW of Bldg. 98 are covered by vegetation.	Correct/Inspect/Prevent	30 November 94	
14	45	Fuel bowser (mobile tank) collects fuel from solar distillation unit and is not checked on a daily basis; has spill potential if unit is overfilled or distillate line comes loose.	Correct/Inspect/Prevent	30 November 94	

TABLE 7.3 (Continued)

LOW PRIORITY CONTAMINATION REDUCTION MEASURES

Dr. Area	Location/ Facility No.	Potential Contaminant Source	Recommended Improvements	Implementation Target Date	Responsible Party
14 (Cont'd)	54	Industrial pretreatment area is partially bermed and filter screen is exposed to rain/air/wind. Driveway sloped towards storm drain. Paint chips, wastewater and solvent are sources of storm water contamination.	Correct/Inspect/Prevent	30 November 94	
		No. 2 fuel drop has stains on pipe and concrete pad; dead vegetation under pipe.	Correct/Inspect/Prevent	30 November 94	
	56	Open dumpster with chemical smell; adjacent ground is stained; bottom of dumpster rusted.	Correct/Inspect/Prevent	30 November 94	
	89	Open unsecured drums are placed on flat bed truck and moved over rough pavement.	Correct/Inspect/Prevent	30 November 94	
17	2076	Stains due to spills/leaks around base of covered mechanical equipment.	Correct/Inspect/Prevent	30 November 94	

TABLE 7.4

ROBINS AFB, GEORGIA
UPCOMING STORM WATER RELATED PROJECTS

TITLE	PROJECT #
Water Training	OS-005033
Clean AFFF Lagoon	93-0204
Inspect/Survey Industrial Sewers	90-0257
Replace Sanitary Line Duck Lake	94-0025
Replace Industrial Waste Lines	94-1704
Wetlands Delineation	93-0124
Erosion and Sediment Controls	93-0122
Install Automatic Valves at W/R	94-0185
Repair IWTP/STP Lines	94-0007
Install Industrial Wastewater Treatments	93-0033
Study/Investigate Oil/Water Separators	93-0126
Clean/Repair Oil/Water Separators	93-0011
Cooling Water Study	94-0032

7.2 COMPLIANCE EVALUATION

7.2.1 The Purpose of the Water Quality Monitoring Program

According to the requirements of the State of Georgia General Permit, RAFB is required to establish a storm water monitoring program that involves the annual collection of water samples at specified storm water outfalls and analysis of those samples for the presence of pollutants. The analytical data derived from the analyses provide information on the general quality of the storm water discharge coming from RAFB, identify the types and concentrations of pollutants present in the discharge, indicate the potential environmental risk of the storm water discharge, and help in identifying potential sources of storm water pollution at RAFB.

The information gathered during the storm water monitoring program assists RAFB in the following objectives:

- Ensuring that storm water discharges comply with all requirements specified in the Georgia General Permit.
- Ensuring that practices to control pollutants in storm water discharges at RAFB are evaluated and modified to meet changing conditions.
- Aiding in the implementation of the SWPPP required by the Georgia General Permit.
- Measuring the effectiveness of BMPs in removing pollutants in storm water discharges.

The Water Quality Sampling Report (Appendix H), as a part of the SWPPP for RAFB, details the storm water sampling effort conducted at the twelve outfall locations as described in Section 3, located in Figure 3.2 and photographed in Appendix F. The analytical results of this sampling effort are provided in that report and their significance is described.

Appendix I contains a template for laboratory data table formatting for future sampling events. Use of this template will facilitate efforts in comparing analytical results from each successive annual sampling.

7.2.2 Annual Site Compliance Evaluation

EM will conduct an annual comprehensive inspection similar to the initial site inspection used to develop this SWPPP. This annual inspection will facilitate the update of the SWPPP and assure compliance with its provisions.

This annual evaluation also provides a basis for evaluating the overall effectiveness of the SWPPP as to whether measures to reduce pollutant loadings identified in the SWPPP are adequate and properly implemented or whether additional control measures are needed.

The process for conducting the evaluation will follow the following steps:

- Review the current SWPPP.
- Review facility operations for the past year to determine if additional areas should be included in the Plan or if any existing areas were modified and thus require Plan modifications.
- Conduct a comprehensive inspection to determine if all storm water pollution prevention measures (1) are accurately identified in the Plan, and (2) are in place and working properly.
- Document findings in a report summarizing the scope of the inspection, personnel making the inspection, date(s) of the inspection, and major observations relating to the implementation of the Plan.

Based on the results of the inspection, the SWPPP shall be revised as appropriate within thirty (30) days of the inspection and shall provide for implementation of any changes to the Plan in a timely manner, but in no case more than three months after the inspection.

Records of the Annual Site Inspection will be maintained by EM and all documentation regarding conditions necessitating modifications to the SWPPP shall be kept in Appendix J of this Plan until one year after coverage under the permit expires. An example of the Annual Site Inspection Checklist is included as an attachment at the end of this section. Also included as a part of this Checklist is a Facility Inspection Form and a SWPPP Amendment Documentation Form that will aid the evaluating team in documenting facility inspections and resulting SWPPP revisions.

7.2.3 Record Keeping Requirements

Keeping records of and reporting events that occur on-site is an effective way of tracking the progress of pollution prevention efforts. Analyzing records of past spills provides useful information for developing improved BMPs to prevent future spills of the same kind. Members of the Pollution Prevention Team will maintain a record keeping system for documenting spills, leaks, and other discharges, including discharges of hazardous substances in reportable quantities. Records will also be maintained for all inspections and preventive maintenance activities.

EM will keep records of activities relevant to the implementation of the SWPPP. Several of these activities are already documented by RAFB on a regular basis:

- records of all spills on Base;
- records of industrial waste handling and disposal;
- records of chemical storage, use, and potential hazards;
- water quality monitoring data from outfalls;
- operation records for chemical and waste management facilities; and
- documentation of modifications to the storm sewers.

Records of spills, leaks, or other discharges, inspections, and maintenance activities must be retained for at least one year after coverage under the permit expires.

Records of storm water monitoring information must be retained for a three year period from the date of sample collection or for the term of the permit, whichever is greater.

7.2.4 Plan Revisions

EM will revise the SWPPP annually to address findings of the Annual Site Compliance Evaluation as detailed in Section 7.2.2. Additional modifications of the Plan will be made whenever a significant change in the risk of pollutant discharge to storm water is brought about by changes in design, construction, operation, or maintenance of RAFB facilities. All amendments to the Plan shall be detailed on SWPPP Amendment Documentation forms and maintained in Appendix J as part of this Plan.

A SWPPP Revision Checklist is also presented as an attachment at the end of this section to provide assistance in keeping the SWPPP current.

ATTACHMENT A
ANNUAL SITE INSPECTION CHECKLIST

The following task list will be used by EM to assist in identifying major areas to be examined during the annual site inspection.

- ❐ Structural integrity of outfalls, detention ponds, and ditches has been checked, and determined adequate. All structural components are cleaned and functioning as designed.

- ❐ Integrity of spill containment structures for outdoor bulk liquid storage facilities (POL, ASTs, USTs) and drummed material storage sites has been verified.
  - ❐ No spots or other traces of oil, grease, or other chemicals on the ground?
  - ❐ Review of maintenance records for major fuel storage and distribution systems has been completed.

- ❐ Integrity of cover for sites under investigation or remediation by the Installation Restoration Program has been confirmed.

- ❐ Review of significant spills and response actions has been completed.

- ❐ Audit of vehicle maintenance facilities has been completed.

- ❐ Inspections of material storage yards for potential sources of storm water contamination has been completed.

- ❐ Review of significant material inventory completed.

- ❐ A visual inspection of equipment needed to implement the Plan, such as spill response equipment, has been made.

CHECKLIST (Continued)

- ❐ Operation of chemical staging facilities and chemical storage buildings subject to storm water discharge has been confirmed.
  - ❐ Storage containers do not show signs of corrosion or leaks.
  - ❐ Containers are labeled properly.
  - ❐ No open or unsealed containers visible.
  - ❐ No containers in exposed or non-contained areas.
  - ❐ No visible evidence of contaminants entering drainage system.

- ❐ Operation of the DRMO hazardous waste storage facility has been reviewed.
  - ❐ Storage containers do not show signs of corrosion or leaks.
  - ❐ Containers are labeled properly.
  - ❐ No open or unsealed containers visible.
  - ❐ No containers in exposed or non-contained areas.
  - ❐ No visible evidence of contaminants entering drainage system.

- ❐ Operation of industrial wastewater treatment plant reviewed.
  - ❐ Housekeeping adequate.
  - ❐ Preventive maintenance documented and current.
  - ❐ Spill prevention/containment measures sufficient.
  - ❐ Inspection reports current.
  - ❐ No visual evidence of contaminants entering drainage system.

- ❐ Shop operations have been examined.
  - ❐ Housekeeping adequate.
  - ❐ Preventive maintenance documented and current.
  - ❐ Spill prevention/containment measures sufficient.
  - ❐ Inspection reports current.
  - ❐ No visual evidence of contaminants entering drainage system.

CHECKLIST (Continued)

- ❐ Pesticide storage area visited.
  - ❐ Housekeeping adequate.
  - ❐ Preventive maintenance documented and current.
  - ❐ Spill prevention/containment measures sufficient.
  - ❐ Inspection reports current.
  - ❐ No visual evidence of contaminants entering drainage system.

- ❐ Airfields and Aprons inspected.
  - ❐ Housekeeping adequate.
  - ❐ Preventive maintenance documented and current.
  - ❐ Spill prevention/containment measures sufficient.
  - ❐ Inspection reports current.
  - ❐ No visual evidence of contaminants entering drainage system.

- ❐ New facilities contributing to a storm water discharge associated with industrial activity have been visually inspected for evidence of, or the potential for, pollutants entering the drainage system.

Attachment "B," Facility Inspection Form, shall be used to document each non-compliance encountered during inspections. If it is determined that an amendment to the Plan is required, EM shall record amended sections on Attachment "C," SWPPP Amendment Documentation Form, prior to amending the existing body of the Plan. Copies of all amendments to the Plan shall be maintained in Appendix J as a part of the Plan.

ATTACHMENT 'B'
FACILITY INSPECTION FORM

INSPECTOR:______________________________

FACILITY/LOCATION INSPECTED:______________________________

DATE OF INSPECTION:______________________________

SITE MAP UPDATE: REQUIRED________ NOT REQUIRED________
(Complete Attachment C Form)

EXPLANATION:______________________________

____

____

____

OBSERVATIONS:______________________________

____

____

SUGGESTED CORRECTIVE ACTION:______________________________

____

____

SCHEDULE OF CORRECTIVE ACTION:______________________________

____

____

CORRECTIVE ACTION IMPLEMENTED:______________________________

____

____

AMENDMENT TO PLAN: REQUIRED______ NOT REQUIRED________
(COMPLETE ATTACHMENT C FORM)

ATTACHMENT 'C'
SWPPP AMENDMENT DOCUMENTATION FORM

AUTHORIZED OFFICIAL:______________________________

TITLE:______________________________

DATE:______________________________

AMENDED SECTION(S):

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REASON FOR AMENDMENT(S):

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AUTHORIZED OFFICIAL SIGNATURE:______________________________

DATE:______________________________

ATTACHMENT D
SWPPP REVISION CHECKLIST

The following checklist is to be used by EM to ensure that the requirements of the SWPPP are kept current. The checklist provides a method of identifying sections of the Plan requiring revision due to the occurrence of specific events.

GENERAL PLAN UPDATES:

- ❐ Annual Site Compliance Evaluation has been completed by EM.
- ❐ All non-compliances encountered during annual inspection requiring Plan amendments have been recorded on SWPPP Amendment Documentation forms.
- ❐ Completed SWPPP Amendment Documentation forms have been placed in Appendix J.
- ❐ Information in SWPPP has been revised to reflect amended sections.
- ❐ Annual storm water outfall monitoring has been completed and data is presented in Appendix H.

SECTION 2 UPDATES:

- ❐ Revise section to reflect changes in personnel or responsibility on the Storm Water Pollution Prevention Team.
  - ❐ Personnel change
  - ❐ Responsibility change

SECTION 3 UPDATES:

- ❐ Revise section to reflect implementation of or additions to recommendations to the underground collection system areas of concern table.
  - ❐ Illicit connection removed
  - ❐ Illicit connection discovered
  - ❐ Corresponding drainage area map updated
- ❐ Revise section to reflect a change in the significant materials inventory.
  - ❐ Significant material storage area has been ❐ added ❐ deleted.
  - ❐ Significant material has been ❐ added ❐ deleted from storage area.
  - ❐ Significant material inventory table updated.
  - ❐ Corresponding drainage area map updated.

SWPPP REVISION CHECKLIST (Continued)

- ❐ Revise section to reflect occurrence of a significant spill/leak that potentially affects storm water contamination.
  - ❐ Spill/leak occurred.
  - ❐ Spill/leak information added to tables.
  - ❐ Corresponding drainage area map updated to identify spill/leak location.

SECTION 4 UPDATES:

- ❐ Revise section to reflect modifications of BMPs for following areas:
  - ❐ Shop Operations
  - ❐ Wastewater Disposal
  - ❐ Material Storage Areas
  - ❐ POLs (including ASTs/USTs)
  - ❐ Chemical Staging Areas
  - ❐ Hazardous Waste Management
  - ❐ Airfields and Aprons
  - ❐ IRP Sites
  - ❐ Pesticide Management
  - ❐ Spill and Prevention Response
  - ❐ Personnel Training
  - ❐ Facility Inspections
  - ❐ Preventive Maintenance

SECTION 5 UPDATES:

- ❐ Revise section to reflect additional Facilities of Concern identified during annual site inspection or to remove previously identified Facilities of Concern due to the implementation of corrective actions.
  - ❐ Tables updated to reflect additional Facilities of Concern.
  - ❐ Tables updated to delete Facilities of Concern.
  - ❐ Corresponding drainage area map updated.

SWPPP REVISION CHECKLIST (Continued)

SECTION 6 UPDATES:

- ❒ Revise section to detail potential contamination sources for new Facilities of Concern identified in Section 5 update.
  - ❒ Sources of contamination identified.
  - ❒ Recommended improvements listed.
  - ❒ Priority identified.

SECTION 7 UPDATES:

- ❒ Revise section to reflect current implementation schedule status.
  - ❒ Implementation schedule and responsible party for recommended improvements outlined in Section 6 update has been added.
  - ❒ Implementation of recommendation has been completed.

SECTION 9 UPDATES:

- ❒ Revise section to reflect modifications to outfall certifications.
  - ❒ Outfall certification added.
  - ❒ Outfall certification deleted.

SECTION 8
STORM WATER MANAGEMENT PRACTICES FOR CONSTRUCTION SITES

All construction sites at RAFB with disturbed land area of five acres or greater are required to obtain a permit from the Georgia Environmental Protection Division to discharge stormwater. Obtaining the stormwater discharge permit is a two step process:

- submitting a Notice of Intent to discharge stormwater; and
- compliance with the State of Georgia's General Permit requirements.

A primary component of compliance with Georgia's General Permit requirements is the preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP) for construction activities.

The SWPPP identifies potential sources of pollution which may reasonably be expected to affect the quality of storm water discharges from construction activities. The SWPPP describes and ensures the implementation of practices which will be used to reduce the pollutants in storm water discharges associated with industrial activity at the construction site and assures compliance with the terms and conditions of the permit.

The SWPPP is developed and implemented following six basic phases as listed below:

- Site Evaluation and Design Development Phase;
- Assessment Phase;
- Control Selection/Plan Design Phase;
- Certification and Notification Phase;
- Implementation/Construction Phase; and
- Final Stabilization/Termination Phase.

The Storm Water Pollution Prevention Plan For Construction Activities, which assists in the development and implementation of SWPPPs for construction activities at RAFB, is contained in a separate document.

SECTION 9
CERTIFICATION

Part IV D3 g (1) of the Georgia General Permit to discharge storm water associated with industrial activity requires:

> "The SWPPP shall include a certification that the discharge has been tested or evaluated for the presence of non-storm water discharges. The certification shall include the identification of potential significant sources of non-storm water at the site, a description of the results of any test and/or evaluation for the presence of non-storm discharges, the evaluation criteria or testing method used, the date of any testing and/or evaluation, and the on-site drainage points that were directly observed during the test."

The following certifications are provided for the RAFB storm water discharge points.

FIGURE 9.1
OUTFALL CERTIFICATIONS

Outfall Number	Method of Test or Evaluation	Results of Tests for Presence of Non-Storm Water Discharges	Potential Significant Sources of Non-Storm Water	Date of Test or Evaluation	Identity of Evaluators
SW-2	Visual	Oil sheen on water in inlets south and east of Building 2078.	To Be Determined	Nov-Dec 1993	A. F. Bollinger, ES et al.
		Oil sheen on water in inlet near Building 2079.	To Be Determined	Nov-Dec 1993	A. F. Bollinger, ES et al.
		Flow in inlet near Building 2079; strong fuel odor.	To Be Determined	Nov-Dec 1993	A. F. Bollinger, ES et al.
		Oil sheen on water in inlet east of Building 2083.	To Be Determined	Nov-Dec 1993	A. F. Bollinger, ES et al.

CERTIFICATION

I, ______________________ (responsible corporate official), certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A. Name & Official Title (type of print)	B. Area Code and Telephone No.
C. Signature	D. Date Signed

FIGURE 9.1 (CONTINUED)
OUTFALL CERTIFICATIONS

Outfall Number	Method of Test or Evaluation	Results of Tests for Presence of Non-Storm Water Discharges	Potential Significant Sources of Non-Storm Water	Date of Test or Evaluation	Identity of Evaluators
SW-4	Visual	No non-storm water discharge detected.	NA	Nov-Dec 1993	A. F. Bollinger, ES et al.
SW-5	Visual	No non-storm water discharge detected.	NA	Nov-Dec 1993	A. F. Bollinger, ES et al.
SW-7	Visual	No non-storm water discharge detected.	NA	Nov-Dec 1993	A. F. Bollinger, ES et al.
SW-9	Visual	No non-storm water discharge detected.	NA	Nov-Dec 1993	A. F. Bollinger, ES et al.
SW-12	Visual	Non-storm water detected in manhole adjacent to Building 1602.	To Be Determined	Nov-Dec 1993	A. F. Bollinger, ES et al.

CERTIFICATION

I, ______________________ (responsible corporate official), certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A. Name & Official Title (type of print)	B. Area Code and Telephone No.
C. Signature	D. Date Signed

FIGURE 9.1 (CONTINUED)
OUTFALL CERTIFICATIONS

Outfall Number	Method of Test or Evaluation	Results of Tests for Presence of Non-Storm Water Discharges	Potential Significant Sources of Non-Storm Water	Date of Test or Evaluation	Identity of Evaluators
DA-12	Visual	Discolored water with oil sheen detected exiting culvert near Building 2086.	To Be Determined	Nov-Dec 1993	A. F. Bollinger, ES et al.
DA-13	Visual	No non-storm water discharges detected.	NA	Nov-Dec 1993	A. F. Bollinger, ES et al.
DA-17	Visual	No non-storm water discharges detected.	NA	Nov-Dec 1993	A. F. Bollinger, ES et al.
DA-18	Visual	No non-storm water discharges detected.	NA	Nov-Dec 1993	A. F. Bollinger, ES et al.

CERTIFICATION

I, ______________________________ (responsible corporate official), certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A. Name & Official Title (type of print)	B. Area Code and Telephone No.
C. Signature	D. Date Signed

APPENDIX A
GEORGIA WATER QUALITY CONTROL ACT

GEORGIA WATER QUALITY CONTROL ACT

(Code of Georgia, Title 12—Conservation and Natural Resources, Chapter 5—Water Resources, Article 2—Control of Water Pollution and Surface-Water Use; Enacted by Acts of 1964, page 416; Amended by Acts of 1966, p. 316; Acts of 1973, p. 1288; Acts of 1974, pp. 599, 1215; Acts of 1977, p. 368; Acts of 1978, p. 2245; Acts of 1983, pp. 2, 2304; Acts of 1984, pp. 12, 404; Acts of 1986, p. 350; Acts of 1988, pp. 1343. 1694; Acts of 1989, pp. 280, 319; Acts of 1990, pp. 8, 1201, 1203, 1207, 1211, 1216, 1218; Acts of 1991, pp. 995, 1042, 1386; Acts of 1992, p. 6)

**Administering Agency: Department of Natural Resources
270 Washington Street
Atlanta, Georgia 30334**

12-5-20. This article may be cited as the "Georgia Water Quality Control Act."

12-5-21. (a) The people of the State of Georgia are dependent upon the rivers, streams, lakes, and subsurface waters of the state for public and private water supply and for agricultural, industrial, and recreational uses. It is therefore declared to be the policy of the State of Georgia that the water resources of the state shall be utilized prudently for the maximum benefit of the people, in order to restore and maintain a reasonsable degree of purity in the waters of the state and an adequate supply of such waters, and to require where necessary reasonable usage of the waters of the state and reasonable treatment of sewage, industrial wastes, and other wastes prior to their discharge into such waters. To achieve this end, the government of the state shall assume responsibility for the quality and quantity of such water resources and the establishment and maintenance of a water quality and water quantity control program adequate for present needs and designed to care for the future needs of the state, provided that nothing contained in this article shall be construed to waive the immunity of of the state for any purpose.

(b) The achievement of the purposes described in subsection (a) of this Code section requires that the Environmental Protection Division of the Department of Natural Resources be charged with the duty described in that subsection, and that it have the authority to regulate the withdrawal, diversion, or impoundment of the surface waters of the state, and to require the use of reasonable methods after having considered the technical means available for the reduction of pollution and economic factors involved to prevent and control the pollution of the waters of the state.

(c) Further, it is the intent of this article to establish within the executive branch of the government administrative facilities and procedures for determining improper usage of the surface waters of the state and pollution of the waters of the state, and to confer discretionary administrative authority upon the Environmental Protection Division to take these and related circumstances into consideration in its decisions and actions in determining, under the conditions and specific cases, those procedures which will best protect the public interest.

12-5-22. As used in this article, the term:

(1) "Director" means the director of the Environmental Protection Division of the Department of Natural Resources.

(2) "Division" means the Environmental Protection Division of the Department of Natural Resources.

(3) "Effluent limitation" means any restriction or prohibition established under this article on quantities, rates, or concentrations, or a combination thereof, of chemical, physical, biological, or other constituents which are discharged from point sources into the water of the state, including, but not limited to, schedules of compliance.

(4) "Industrial wastes" means any liquid, solid, or gaseous substance, or combination thereof, resulting from a process of industry, manufacture, or business or from the development of any natural resources.

(5) "Nonpoint source" means any source which discharges pollutants into the waters of the state other than a point source.

(6) "Other wastes" means liquid, gaseous, or solid substances, except industrial wastes and sewage, which may cause or tend to cause pollution of any waters of the state.

(7) "Person" means any individual, corporation, partnership or other unincorpor-

ated association. This term may extend and be applied to bodies politic and corporate.

(8) "Point source" means any discernible, confined, or discrete conveyance, including, but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged.

(9) "Pollutant" means dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, industrial wastes, municipal waste, and agricultural waste discharged into the waters of the state. It does not mean (A) sewage from vessels or (B) water, gas, or other material which is injected into a well to facilitate production of oil or gas, or water derived in association with oil or gas production and disposed of in a well, if the well, used either to facilitate production or for disposal purposes, is approved by the appropriate authorities of this state, and if such authorities determine that such injection or disposal will not result in degradation of ground-water or surface-water resources.

(10) "Pollution" means the manmade or man-induced alteration of the chemical, physical, biological, and radiological integrity of water.

(11) "Sewage" means the water carried waste products or discharges from human beings or from the rendering of animal products, or chemicals or other wastes from residences, public or private buildings, or industrial establishments, together with such ground, surface, or storm water as may be present.

(12) "Sewage system" means sewage treatment works, pipelines or conduits, pumping stations, and force mains, and all other constructions, devices, and applicances appurtenant thereto, used for conducting sewage or industrial wastes or other wastes to the point of ultimate disposal.

(13) "Waters" or "waters of the state" means any and all rivers, streams, creeks, branches, lakes, reservoirs, ponds, drainage systems, springs, wells, and all other bodies of surface or subsurface water, natural or artificial, lying within or forming a part of the boundaries of the state which are not entirely confined and retained completely upon the property of a single individual, partnership, or corporation.

12-5-23. (a) In the performance of its duties, the division may:

(1) Conduct or cooperate in research for the purpose of developing economical and practicable methods of preventing and controlling pollution;

(2) Cooperate with agencies of the federal government and with other agencies of the state and political subdivisions thereof;

(3) Enter into agreements and compacts with other states, and with the United States, relative to the prevention and control of pollution in any state waters and on water quality matters, in accordance with the Constitution and statutes of Georgia; and

(4) Receive, accept, hold, and use on behalf of the state, and for purposes provided for in this article, gifts, grants, donations, devises, and bequests of real, personal, and mixed property of every kind and description.

(b) In the performance of its duties, the division shall:

(1) Excercise general supervision over the administration and enforcement of this article and all rules, regulations, and orders promulgated hereunder;

(2) Act in the interest of the people of the state to restore and maintain a reasonable degree of purity in the waters of the state;

(3) Encourage voluntary cooperation by all persons in the state in restoring and maintaining a reasonable degree of purity in the waters of the state;

(4) Survey the waters of the state to determine the extent, character, and effects of existing conditions of pollution;

(5) Prepare and develop a general comprehensive plan for the prevention of any further pollution and reduction of existing pollution after a thorough study of existing practices and available research;

(6) Administer and enforce the laws of the state relating to the prevention and control of pollution;

(7) Hold hearings to determine whether or not an alleged pollution is contrary to the public interest;

(8) Adopt rules and procedures for the conduct of meetings and hearings. In all hearings relative to violations, or for other procedures under this article, the rules of evidence shall be followed;

(9) Establish or revise standards of water purity for any of the waters of this state, which specify the maximum degree of pollution permissible in accordance with the public interest in water supply; the conservation of fish, game, and aquatic life; and agricultural, industrial, and recreational uses. Prior to establishing or revising the standards of water purity, the division shall consider the technical means available for the reduction of pollution and the economic factors involved;

(10) Require any marine toilet or other disposal unit located on or within any boat operated on waters of this state to have securely affixed to the interior discharge toilet or unit a suitable treatment device in operating condition, constructed and fastened in accordance with regulations of the division, or some other treatment or facility or method authorized by regulation of the division. All sewage passing into or through the marine toilet or units shall pass solely through such device. All boats located upon the waters of this state are subject to inspection by the division or its duly authorized agents at any time for the purpose of determining compliance with this paragraph, provided that this paragraph does not apply to ocean-going vessels of 20 tons displacement or more;

(11) Make investigations and inspections to ensure compliance with this article, the rules and regulations issued pursuant hereto, and any orders that the division may adopt or issue;

(12) Issue an order or orders directing any particular person or persons to secure within the time specified therein such operating results as are reasonable and practicable of attainment toward the control, abatement, and prevention of pollution of the waters of the state and the preservation of the necessary quality for the reasonable use thereof;

(13) Establish or revise through rules and regulations of the Board of Natural Resources or permit conditions, or both, effluent limitations based upon an assessment of technology and processes unrelated to the quality of the receiving waters of this state;

(14) Establish or revise through rules and regulations of the Board of Natural Resources or permit conditions, or both, permissible limits of surface-water usage for both consumptive and nonconsumptive purposes; and

(15) Perform any and all acts and exercise all incidental powers necessary to carry out the purposes and requirements of this article and of the Federal Water Pollution Control Act, as amended, relating to this state's participation in the national pollutant discharge elimination system established under that act.

12-5-23.1. (a) As used in this Code section, the word "lake" means any publicly owned lake or reservoir located wholly or partially within this state which has a normal pool level surface average of 1,000 or more acres.

(b) The director shall establish water quality standards for each lake which require the lake to be safe and suitable for fishing and swimming and for use as a public water supply, unless a use attainability analysis conducted within requirements of this article demonstrates such standards are unattainable.

(c) For purposes of this subsection, a multiple parameter approach for lake water quality standards shall be adopted. Numerical criteria including, but not limited to, those listed below shall be adopted for each lake:

(A) pH (maximum and minimum);

(B) Fecal coliform bacteria;

(C) Chlorophyll for designated areas determined as necessary to protect a specific use;

(D) Total nitrogen;

(E) Total phosphorus loading for the lake in pounds per acre feet per year; and

(F) Dissolved oxygen in the epilimnion during periods of thermal stratification.

(d) The standards for water quality of each lake shall take into account the geographic location of the lake within the state and the location of the lake within its watershed as well as horizontal and vertical variations of hydrological conditions within each lake. The director shall also establish nutrient limits for each of the lakes' major tributary streams, including streams with permitted discharges. Such limits shall be consistent with the requirements of subsection (b) of this Code section and shall be established on the basis of accepted limnological techniques and as necessary in accordance with the legal and technical principles for total maximum daily loads. The nutrient limits for tributary streams shall be established at the same time that the lake water quality standards are established.

(e) After water quality standards are established for each lake and its tributary streams, the division shall monitor each lake on a regular basis to ensure that the lake reaches and maintains such standards.

(f) The data from such monitoring shall be public information. The director shall have the authority to close a swimming area if data from samplings indicates, in the opinion of the director, that such action is necessary for public safety.

(g) Provided funds are available from any source, there shall be a comprehensive study of each lake prior to adopting lake water quality standards for the lake. Study components and procedures will be established after consultation with local officials and affected organizations. The comprehensive study for Lake Sidney Lanier, Lake Walter F. George, and West Point Lake shall be initiated during 1990. At least three comprehensive studies for remaining lakes shall be initiated in each subsequent year. The duration of each study shall not exceed two years. A scientific report on each comprehensive study shall be published within 180 days after the completion of the study. Draft recommendations for numerical criteria for each of the water quality parameters will be simultaneously published, taking into account the scientific findings. A public notice of the draft recommendations, including a copy of the recommendations, will be made available to the public. Public notice in accordance with Chapter 13 of Title 50, the Georgia Administrative Procedure Act, shall be provided for such recommendations. The notice shall be made available at least 30 days prior to board action in a regional public library or county courthouse. The recommendation will be provided to persons submitting a written request. A comment period of not less than 45 days nor more than 60 days will be provided.

(h) The director or the director's designee shall conduct a public hearing within the above-referenced comment period in the vicinity of the lake before the final adoption of lake water quality standards for the lake, the director shall announce the date, time, place, and purpose of the public hearing at least 30 days prior to the hearing. A ten-day period subsequent to the hearing will be allowed for additional public comment.

(i) The Department of Natural Resources will evaluate the comments received during the comment period and during the public hearing and will then develop recommended final standards and criteria for submission to the Board of Natural Resources for consideration and approval.

(j) The final recommendations of the director for lake water quality standards shall be made to the Board of Natural Resources within 60 days after the close of the comment period subsequent to the public hearing provided for in subsection (h) of this Code section. The standards, with such modifications as the board may determine, shall be considered for adoption by the Board of Natural Resources within 60 days after receiving the recommendations from the director. Such standards shall be published by the department and made available to all interested local government officials and citizens of the area served by the lake.

(k) At the discretion of the director, comment periods and deadlines set forth above may be extended, but in no circumstance shall more than one year elapse between the completion of the lake study and the adoption of the final recommendations.

12-5-23.2. Notwithstanding the provisions of Code Section 12-5-23 or any rule, regulation, or order adopted or issued pursuant to this article, no person who has been issued a National Pollutant Discharge Elimination System permit which allows the discharge of 1,000,000 gallons or more per day from a water pollution control plant operated by such person which discharges waste water into the Chattahoochee River between Buford Dam and West Point Reservoir shall discharge waste water from any such water pollution control plant on or after January 1, 1992, which contains more than 0.75 milligrams of phosphorus per liter of waste water on a monthly average basis or which fails to comply with any stricter standard adopted pursuant to Code Section 12-5-23; provided, however, that, notwithstanding the provisions of this Code

section, any person who has been issued a National Pollution Discharge Elimination System permit and who has entered into a finalized consent order shall conform to the schedule adopted in such order, but in no event shall compliance with the discharge limitation provided by this Code section be extended beyond July 4, 1996, and the order shall require that person to make his best efforts to achieve compliance with the discharge limitation by December 31, 1993.

12-5-24. The director is authorized to enter into contracts or compacts on behalf of the State of Georgia with the federal government, sister states, political subdivisions of this state, and public utilities of this state for purposes of proper management of the state's surface-water resources, provided that any such contract shall be subject to approval by the Board of Natural Resources; provided, further, that any such contract shall not grant to any person any right to use surface waters except to the extent such person would qualify for such use under the permitting system established pursuant to Code Section 12-5-31.

12-5-25. The division shall have authority to investigate any apparent violation of any provision of this article and to take any action authorized by this article which it deems necessary and may, after a public hearing has been provided, institute proceedings of mandamus or other proper legal proceedings to enforce this article.

12-5-26. Any duly appointed agent of the division may enter private or public property at reasonable times to inspect or investigate conditions relating to pollution and to inspect the operating records of any sewage system, waste treatment work, or sewage disposal plant, provided that no person shall be required to disclose any secret formula, process, or methods used in any manufacturing operations carried on by him or under his direction or any confidential information concerning business activities carried on by him or under his supervision.

12-5-27. Whenever required to carry out the objectives of this article, including but not limited to developing or assisting in the development of any effluent limitation, or other limitation, prohibition, or standard under this article, or any rule or regulation promulgated and adopted pursuant to this article; determining whether any person is in violation of any effluent limitation, or other limitation, prohibition, or standard under this article, or any rule or regulation promulgated and adopted pursuant to this article; or encouraging or ensuring compliance with any effluent limitation or other prohibition or standard under this article or any rule or regulation promulgated and adopted pursuant to this article, the director may, by order, permit, or otherwise in writing, require the owner or operator of a facility of any type which results in the discharge of pollutants into the waters of the state to:

(1) Establish and maintain records;

(2) Make reports;

(3) Install, use, and maintain monitoring equipment or methods, including, where appropriate, biological monitoring methods;

(4) Sample such discharge, in accordance with such methods, at such locations, at such intervals, and in such manner as the director shall prescribe; and

(5) Provide such other information as he may reasonably require.

12-5-27.1. (a) The General Assembly seeks, through the enactment of this Code section, to set standards limiting the amount of nutrients in various cleaning agents. The General Assembly realizes that the nutrients contained in many of these products serve a valuable purpose in increasing their overall effectiveness, but the General Assembly is also aware that they overstimulate the growth of aquatic life and are causing, and will eventually lead to, an acceleration of the natural eutrophication process of our state's water resources which can result in a lower quality of life and thereby create an undesirable environment in which the citizens of the state would not want to live and do business. Limitations imposed under this Code section should, however, be made taking the following factors into consideration:

(1) The availability of safe, nonpolluting substitutes; and

(2) The differing needs of industrial, commercial, and household users of cleaning agents.

(b) As used in this Code section, the term:

(1) Cleaning agent means a laundry detergent, dishwashing compound, household cleaner, metal cleaner or polish, industrial cleaner, or other substance that is used or intended for use for cleaning purposes.

(2) Nutrient means a substance or combination of substances which, if added to waters in sufficient quantities, provides nourishment that promotes growth of aquatic vegetation in densities which:

(A) Interfere with use of the waters by humans or by any animal, fish, or plant useful to humans; or

(B) Contribute to degradation or alteration of the quality of the waters to an extent detrimental to their use by humans or by any animal, fish, or plant that is useful to humans.

(c) On or after January 1, 1991, it shall be unlawful to sell at retail or use in this state any cleaning agent containing phosphorous, except as otherwise provided in this Code section.

(d) This Code section shall not apply to cleaning agents which are used:

(1) In agricultural or dairy production;

(2) To clean commercial food or beverage processing equipment or containers;

(3) As industrial sanitizers, metal brightners, or acid cleaners, including those containing phosphoric acid or trisodium phosphate;

(4) In industrial processes for metal, fabric, or fiber cleaning and conditioning;

(5) In hospitals, clinics, nursing homes, other healths care facilities, or veterinary hospitals or clinics;

(6) By a commercial laundry or textile rental service company or any other commercial entity:

(A) To provide laundry service to hospitals, clinics, nursing homes, other health care facilities, or veterinary hospitals or clinics;

(B) To clean textile products supplied to industrial or commercial users of the products on a rental basis; or

(C) To clean professional, industrial, or commercial work uniforms;

(7) In the manufacture of health care or veterinary supplies;

(8) In any medical, biological, chemical, engineering, or other such laboratory, including those associated with any academic or research facility;

(9) As water softeners, antiscale agents, or corrosion inhibitors, where such use is in a closed system such as a boiler, air

conditioner, cooling tower, or hot water heating system; or

(10) To clean hard surfaces including windows, sinks, counters, floors, ovens, food preparation surfaces, and plumbing fixtures.

(e) This Code section shall not apply to cleaning agents which:

(1) Are manufactured, stored, sold, or distributed for uses other than household laundry detergents or household or commercial dishwashing agents;

(2) Contain phosphorus in an amount not exceeding 0.5 percent by weight which is incidental to manufacturing; or

(3) Contain phosphorous in an amount not exceeding 8.7 percent by weight and which are intended for use in a commercial or household dishwashing machine.

(f) This Code section shall not apply to any natural or commercial fertilizers.

(g) Local governments shall be responsible for enforcement of the provisions of this Code section within their jurisdictions.

(h) Any person violating the provisions of this Code section shall be guilty of a misdemeanor.

12-5-28. Annual reports shall be made and filed by the division with the Governor and members of the General Assembly.

12-5-29. (a) It shall be unlawful to use any waters of the state for the disposal of sewage, industrial wastes, or other wastes, or to withdraw, divert, or impound any surface waters of the state, except in such a manner as to conform to and comply with this article and all rules, regulations, orders, and permits established under this article and applicable to the waters involved.

(b) No person, without first securing from the division a permit, shall:

(1) Construct, install, or modify any system for disposal of sewage, industrial wastes, or other wastes, or any extension or addition thereto, when the disposal of the sewage, industrial wastes, or other wastes constitutes pollution as defined in this article;

(2) Increase the volume or strength of any sewage, industrial wastes, or other wastes in excess of permissive discharges specified under any existing permit; or

(3) Construct or use any new outlet for the discharge of any sewage, industrial wastes, or other wastes into the waters of the state when such discharge constitutes pollution as defined in this article.

(c) As applied to the waters of Allatoona Lake, Lake Blackshear, Clarks Hill Lake, Hartwell Lake, Lake Sidney Lanier, Lake Oconee, Lake Seminole, Lake Sinclair, Richard B. Russell Lake, Walter F. George Reservior, and West Point Lake, it shall be unlawful for any person to operate or float a vessel having a marine toilet as the term is defined in Code Section 52-7-3 unless such marine toilet only discharges into a holding tank as the term is defined in Code Section 52-7-3; and it shall further be unlawful to operate or float such a vessel, whether moored or not, unless it has a certificate for such holding tank issued by the department affixed thereto.

12-5-29.1. (a) As used in this Code section, the term:

(1) Combined sewer overflow or 'CSO' means a sewage system so designed or constructed as to allow surface-water runoff to enter the conduit carrying sewage, industrial waste, or other waste and, when such conduit exceeds its maximum capaciby, allows a discharge which bypasses the normal treatment works integral to such sewage system and allows untreated or incompletely treated sewage, industrial waste, or other waste to flow, directly or indirectly, into the waters of this state.

(2) Sewage overflow means that untreated sewage, industrial waste, or other waste which is discharged when a CSO exceeds its maximum capacity so that such material bypasses the normal treatment works integral to such sewage system and flows untreated or incompletely treated into the waters of this state.

(b) Any person who owns or operates a CSO in this state on July 1, 1990, shall devise and submit to the director for approval a detailed plan to eliminate sewage overflow or to treat or control sewage overflow so that discharges flowing from such CSO shall not cause a violation of water quality standards in the receiving stream or permit limits for publicly owned waste-water treatment facilities with combined sewer overflows established by the division or by the federal Environmental Protection Agency under the provisions of the Federal Water Pollution Control Act amendments of 1972, 33 U.S.C. Section 1251 and following, as amended by the Clean Water Act of 1977 (P.L. 95-217). Compliance with such standards and permit limits shall be required for all CSO discharges under design conditions, including without limitation storm event frequency, intensity, and duration and treatment technology, as determined by the director based on a site-specific determination of water quality impacts resulting from said discharges.

(c) The plan required by subsection (b) of this Code section shall include, as a minimum, provision for realistic implementation of means to eliminate sewage overflow or effectuate treatment of overflow to meet or exceed such water quality standards in accordance with the following schedules:

(1) Any person who submitted a plan pursuant to subsection (b) of this Code section prior to August 1, 1990, shall implement such plan so that construction is substantially complete and operational to meet the water quality standards in the receiving stream or permit limits as defined by the director not later than December 31, 1993; and

(2) Any person who did not submit a plan pursuant to subsection (b) of this Code section prior to August 1, 1990, shall comply with the following schedule:

(A) The director shall define the design conditions of subsection (b) of this Code section by December 31, 1991, using information provided by CSO owners and information collected by the director;

(B) The CSO owners shall prepare approvable plans and specifications by October 1, 1992, and, based on the director's approval of plans and specifications by December 31, 1992, the owners shall commence construction of the approved CSO facilities by April 1, 1993; and

(C) The construction shall be substantially complete and operational to meet the water quality standards in the receiving stream or permit limits as defined by the director by December 31, 1995.

Any person who fails to implement an approved plan by the dates provided in this subsection, shall, after the applicable date and until such person implements an approved plan, be subject to the liability and penalties provided in Code Sections 12-5-51, 12-5-52, and 12-5-53 and, in

addition, shall be prohibited from adding any additional sewer connections to such combined sewer system.

12-5-30. (a) Any person who owns or operates a facility of any type or who desires to erect, modify, alter, or commence operation of a facility of any type which results or will result in the discharge of pollutants from a point source into the waters of the state shall obtain from the director a permit to make such discharge. Any person desiring to erect, modify, alter, or commence operation of a facility which will result in such discharge but which is not discharging such pollutants as of July 1, 1974, must obtain such permit prior to the discharge of same. Any person who is operating a facility which results in such discharge as of July 1, 1974, may continue to make such discharge pending final action by the director on the application for such discharge permit, provided that such application has been filed with the director by September 29, 1974; and provided, further, that such discharge does not present an immediate health hazard to the public. The director, under the conditions he prescribes, may require the submission of such plans, specifications, and other information as he deems relevant in connection with the issuance of such permits. The director may, after public notice and opportunity for public hearing, issue a permit which authorizes the person to make such discharge, upon condition that such discharge meets or will meet, pursuant to any schedule of compliance included in such permit, all water quality standards, effluent limitations, and all other requirements established pursuant to this article.

(b) Any person desiring to erect or modify facilities or commence or alter an operation of any type which will result in the discharge of pollutants from a nonpoint source into the waters of the state, which will render or is likely to render such waters harmful to the public health, safety, or welfare, or harmful or substantially less useful for domestic, municipal, industrial, agricultural, recreational, or other lawful uses, or for animals, birds, or aquatic life, shall obtain a permit from the director to make such discharge. Any person desiring to erect, modify, alter, or commence operation of a facility which will result in such discharge but which is not discharging such pollutants as of July 1, 1974, must obtain such permit prior to the discharge of same. The director, under the conditions he prescribes, may require the submission of such plans, specifications, and other information as he deems relevant in connection with the issuance of such permits. The director may, after public notice and opportunity for public hearing, issue a permit which authorizes the person to make such discharge upon condition that such discharge meets or will meet, pursuant to any schedule of compliance included in such permit, all water quality standards, effluent limitations, and all other requirements established pursuant to this article.

(c) The director is authorized to require as conditions in permits issued under subsections (a) and (b) of this Code section the achievement of effluent limitations established pursuant to this article. In imposing effluent limitations as conditions in such permits, the director shall base his determination upon the assessment of technology and processes unrelated to the quality of the receiving waters of this state. Effluent limitations required as conditions of such permits shall be achieved in the shortest reasonable period of time consistent with state law and the Federal Water Pollution Control Act, as amended. The director is further authorized to set schedules of compliance and include such schedules within the terms and conditions of such permits for the discharge of such pollutants into the waters of the state and to prescribe terms and conditions for such permits to assure compliance with applicable effluent limitations and water quality criteria established pursuant to this article, including, but not limited to, requirements concerning recording, reporting, monitoring, entry, and inspection to the extent permissible under this article, and such other requirements as are consistent with the purposes of this article.

(d) Each permit issued under subsections (a) and (b) of this Code section shall have a fixed term set by the director consistent with the federal Clean Water Act of 1977, P.L. 95-217, as now or hereafter amended but not to exceed ten years. Upon expiration of such permit, a new permit may be issued by the director after review by him in accordance with such guidelines as he shall prescribe; after notice and opportunity for public hearing; and upon condition that the discharge meets or will meet, pursuant to any schedule of compliance included in such permit, all applicable water quality standards, effluent limitations, and all other requirements established pursuant to this article. The director is authorized to include in permits issued under this subsection such terms and conditions as are authorized under subsections (a) and (c) of this Code section. The director may revoke, suspend, or modify any permit issued under this subsection or subsection (a) or (b) of this Code section, for cause, including but not limited to the following:

(1) Violation of any condition of the permit:

(2) Obtaining a permit by misrepresentation or failure to disclose fully all relevant facts;

(3) Change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge.

In the event of modification, suspension, or revocation of a permit, the director shall serve written notice of such action on the permit holder and shall set forth in such notice the reason for such action.

(e) Notwithstanding any other provision in this Code section, the director may issue permits, after notice and opportunity for public hearings, for the discharge of dredged or fill material into the waters and wetlands of the state, in accordance with the standards and criteria set forth in Section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. Section 1344, as amended by the Clean Water Act of 1977 (P.L. 95-217), upon receiving delegation of such authority, except that this subsection shall not authorize the director to issue permits with respect to projects under review by the United States Army Corps of Engineers as to which a public hearing has been held before July 1, 1974. In administering such a program, the director is empowered with the authority to take such action as is set forth in Section 404(h)(1)(A) through (H) of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. Section 1344, as amended by the Clean Water Act of 1977 (P.L. 95-217). No person covered by this subsection shall discharge dredged or fill material into the waters and wetlands of this state except in a manner which complies with this article and Section 404 of

the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. Section 1344, as amended by the Clean Water Act of 1977 (P.L. 95-217).

(f) The director may issue general permits for discharges of pollutants from categories of point sources which are subject to the same permit limitations and conditions. Such general permits may be issued without individual applications.

12-5-30.1 (a) As used in this Code section, the term:

(1) "Board" means the Board of Natural Resources.

(2) "Consistently exceeding an effluent limitation" means a POTW's exceeding the POTW's assigned effluent limitation for at least five days out of each seven-day period during a total period of 180 consecutive days.

(3) "Major spill" means the discharge of pollutants into the waters of this state by a POTW at a rate substantially exceeding the effluent limitation of the POTW, and such term shall be more specifically defined by regulations of the board.

(4) "Monitoring" means the systematic measurement of chemical and biological pollutants present in waters of this state which are affected by a major spill or by consistently exceeding an effluent limitation.

(5) "Publicly Owned Treatment Works" or "POTW" means the city, town, county, district, association, or other public body created by or pursuant to state law or federal law that owns and operates a treatment works and, where appropriate, shall include the treatment works and any sewers or other appurtenances that convey waste water to the treatment works.

(b) By not later than January 1, 1990, the board shall provide by rules or regulations for the following:

(1) For immediate notification to the division of a major spill by a POTW;

(2) For the POTW responsible for the major spill to cause to be published in the legal organ of the country where the spill occurred a notice of such spill, such notice to be published within not more than seven days after the date of the spill;

(3) For the division to provide notice of the major spill within 24 hours thereafter to every county, municipality, or other public agency whose public water supply is within a distance of 20 miles downstream and to any others which could potentially be affected by the spill.

(4) For independent monitoring of waters affected by a major spill or by consistently exceeding an effluent limitation, with such monitoring being at the expense of the POTW, for a period of at least one year and for the results of such monitoring to be regularly provided to all counties, municipalities, and other public agencies using the affected waters as a source of public water supply.

12-5-30.2. (a) As used in this Code section, the term 'combined sewer overflow' or 'CSO' means a sewage system so designed or constructed as to allow surface-water runoff to enter the conduit carrying sewage, industrial waste, or other waste and, when such conduit exceeds its maximum capacity, allows a discharge which by-passes the normal treatment works integral to such sewage system and allows untreated or incompletely treated sewage, industrial waste, or other waste to flow, directly or indirectly, into the waters of the State.

(b) After March 31, 1992, no person shall operate a CSO in this state unless he has obtained a permit to do so from the director. The director, under the conditions he prescribes, shall require the submission of such plans, specifications, and other information as he deems relevant in connection with the issuance of such permits. Compliance with permit limits shall be required for all CSO discharges under design conditions as determined by the director.

(c) The director is authorized to require as conditions in permits issued under this Code section the achievement of effluent limitations established pursuant to this article. In imposing effluent limitations as conditions in such permits, the director shall base his determination upon the assessment of technology and processes unrelated to the quality of receiving waters of this state. Effluent limitations required as conditions of such permits shall be achieved in the shortest reasonable period of time consistent with state law and the Federal Water Pollution Control Act, as amended. The director is further authorized to set schedules of compliance and include such schedules within the terms and conditions of such permits for the operation of a CSO and to prescribe terms and conditions for such permits to assure compliance with applicable effluent limitations and water quality criteria established pursuant to this article, including, but not limited to, requirements concerning recording, reporting, monitoring, and inspection to the extent permissible under this article and such other requirements as are consistent with the purposes of this article.

(d) Each permit issued pursuant to this Code section shall have a fixed term of five years and may be renewed by the director in accordance with such guidelines as he shall prescribe but only after the director has issued a written finding, based upon actual investigation, that the applicant has substantially followed any schedules of compliance established pursuant to subsection (c) of this Code section.

12-5-31. (a)(1) No person shall make any withdrawal, diversion, or impoundment of any of the surface waters of the state for whatever use without obtaining a permit from the director; provided, however, that no permit shall be required for:

(A) Any such withdrawal which does not involve more than 100,000 gallons per day on a monthly average;

(B) Any such diversion which does not reduce the flow of the surface waters at the point where the watercourse, prior to diversion, leaves the person's or persons' property or properties on which the diversion occurred, by more than 100,000 gallons per day on a monthly average;

(C) Any such diversion accomplished as part of construction for transportation purposes which does not reduce the flow of surface waters in the diverted watercourse by more than 150,000 gallons per day on a monthly average; or

(D) Any such impoundment which does not reduce the flow of the surface waters immediately downstream of the impoundment by more than 100,000 gallons per day on a monthly average.

(2) No permit shall be required for a reduction of flow of surface waters during the period of construction of an impoundment, including the initial filling of the impoundment, or for farm ponds or farm impoundments constructed and managed for the sole purpose of fish, wildlife, recreation, or other farm uses.

(3) Notwithstanding any other provision of this Code section to the contrary, a

permit for the withdrawal or diversion of surface waters for farm uses shall be issued by the director to any person when the applicant submits an application which provides reasonable proof that the applicant's farm use of surface waters occurred prior to July 1, 1988, and when any such application is submitted prior to July 1, 1991. If submitted prior to July 1, 1991, an application for a permit to be issued based upon farm uses of surface waters occurring prior to July 1, 1988, shall be granted for the withdrawal or diversion of surface waters at a rate of withdrawal or diversion equal to the greater of the operating capacity in place for withdrawal or diversion on July 1, 1988, or, when measured in gallons per day on a monthly average for a calendar year, the greatest withdrawal or diversion capacity during the five-year period immediately preceding July 1, 1988. If submitted after July 1, 1991, or, regardless of when submitted, if it is based upon a withdrawal or diversion of surface waters for farm uses occurring or proposed to occur on or after July 1, 1988, an application shall be subject to evaluation and classification pursuant to subsections (e), (f) and (g) of this Code section, but a permit based upon such evaluation and classification shall be issued to ensure the applicant's right to a reasonable use of such surface waters. Any permit issued pursuant to this paragraph shall be conditioned upon the requirement that the permittee shall provide, on forms prescribed by the director, information relating to a general description of the lands and number of acres subject to irrigation and the permit; a description of the general type of irrigation system used; the source of withdrawal water such as river, stream, or impoundment; and pump information, including rated capacity, pump location, and power information. Permits issued under this paragraph shall have no term and may be transferred or assigned to subsequent owners of the lands which are the subject of such permit; provided, however, that the division shall receive written notice of any such transfer or assignment. Any modification in the use or capacity conditions contained in the permit or in the lands which are the subject of such permit shall require the permittee to submit an application for review and approval by the director consistent with this Code section. Nothing in this paragraph shall be construed as a repeal or modification of Code Section 12-5-46.

(b) For purposes of this Code section, the term:

(1) "Director" means the director of the Environmental Protection Division of the Department of Natural Resources, or his designee.

(2) "Diversion" means a turning aside or altering of the natural course of surface waters.

(3) "Farm uses" means irrigation of any land used for general farming, forage, aquaculture, pasture, turf production, orchards, or tree and ornamental nurseries; provisions of water supply for farm animals, poultry farming, or any other activity conducted in the course of a farming operation. Farm uses shall also include the processing of perishable agricultural products and the irrigation of recreational turf, except in the Chattahoochee River watershed upstream from Peachtree Creek, where irrigation of recreational turf shall not be considered a farm use.

(4) "Impoundment" means the storing or retaining of surface water by whatever method or means.

(5) "Surface water(s) of the state" or "surface water(s)" means any and all rivers, streams, creeks, branches, lakes, reservoirs, ponds, drainage systems, springs producing in excess of 100,000 gallons per day, and all other bodies of surface water, natural or artificial, lying within or forming a part of the boundaries of the state which are not entirely confined and retained completely upon the property of a single individual, partnership, or corporation.

(6) "Withdrawal" means the taking away of surface water from its natural course.

(c) To obtain a permit pursuant to this Code section, the applicant must establish that the proposed withdrawal, diversion, or impoundment of surface waters is consistent with this article.

(d) All permit applications filed with the director under this Code section shall contain the name and address of the applicant (in the case of a corporation, the address of its principal business office in this state), the date of filing, the source of the water supply, the quantity of water applied for, the use to be made of the water and any limitation thereon, the place of use, the location of the withdrawal, diversion, or impoundment, and such other information as the director may deem necessary; provided, however, any required information already provided the director by the applicant in the context of prior dealings with the division, which information is still correct, may be incorporated into the application by adequate reference to same.

(e) Subject to subsection (g) of this Code section, the Board of Natural Resources shall by rule or regulation establish a reasonable system of classification for application in situations involving competing applications for a supply of available surface waters. Such classifications shall be based upon but not necessarily limited to the following factors:

(1) The number of persons using the particular water source and the object, extent, and necessity of their respective withdrawals, diversions, or impoundments;

(2) The nature and size of the water source;

(3) The physical and chemical nature of any impairment of the water source adversely affecting its availability or fitness for other water uses;

(4) The probable severity and duration of such impairment under foreseeable conditions;

(5) The injury to public health, safety, or welfare which would result if such impairment were not prevented or abated;

(6) The kinds of businesses or activities to which the various uses are related and the economic consequences;

(7) The importance and necessity of the uses claimed by permit applicants and the extent of any injury or detriment caused or expected to be caused to other water uses;

(8) Diversion from or reduction of flows in other water courses;

(9) The prior investments of any person in lands, and plans for the usage of water in connection with such lands which plans have been submitted to the director within a reasonable time after July 1, 1977, or, if for farm uses, after July 1, 1988; provided, however, that the granting of such permit shall not have unreasonably adverse effects upon other water uses in the area, including potential as well as present use;

(10) The varying circumstances of each case.

(f) In the event two or more competing applicants or users qualify equally under subsection (e) of this Code section, the director is authorized to grant permits to applicants or modify the existing permits of users for use of specified quantities of surface waters on a prorated or other reasonable basis in those situations where such action is feasible; provided, however, the director shall give preference to an existing use over an initial application.

(g) The division shall take into consideration the extent to which any withdrawals, diversions, or impoundments are reasonably necessary, in the judgment of the director, to meet the applicant's needs and shall grant a permit which shall meet those reasonable needs; provided, however, that the granting of such permit shall not have unreasonably adverse effects upon other water uses in the area, including but not limited to public use, farm use, and potential as well as present use; and provided, further, that the director shall grant a permit to any permit applicant who on July 1, 1977, has outstanding indebtedness in the form of revenue certificates or general obligation bonds which are being amortized through the sale of surface water, the permitted quantity of which shall be at least in an amount consistent with that quantity for which the revenue certificates or general obligation bonds were issued.

(h) Except for applications filed pursuant to paragraph (3) of subsection (a) of this Code section, permits may be granted for any period of time not less than ten years (unless the applicant requests a shorter period of time) or more than 20 years; provided, however, the director may authorize a permit of duration of up to 50 years in the case of a municipality or other governmental body, where such period is required to provide for the retirement of bonds for the construction of water works or waste disposal facilities. The director may base the duration of such permits on any reasonable system of classification based upon but not necessarily limited to such factors as source of supply and type of use.

(i) A permittee may seek modification of any of the terms of an issued permit. The director may approve the proposed modification if the permittee establishes that a change in conditions has resulted in a need by the permittee of more water than is allowed under the existing permit, or that the proposed modification would result in a more efficient utilization of water than is possible under the existing permit, or that a proposed change in conditions would result in a need by the permittee of more water than is allowed under the existing permit. Any such modification shall be consistent with the health and safety of the citizens of this state and with this article. In any administrative review proceeding resulting from an action of the director under this subsection, the burden of proof in establishing that the requisite criteria has been met shall be upon the person seeking such modification.

(j) A permittee may seek renewal of a permit issued pursuant to this Code section from the director at any time within six months from the date of expiration of the permit. Except as otherwise specified in this Code section, all permit renewal applications shall be treated in the same manner as the initial permit application.

(k) The director may revoke, suspend, or modify a permit issued pursuant to this Code section as follows:

(1) For any material false statement in an application of a permit to initiate, modify, or continue a use of surface waters, or for any material false statement in any report or statement of fact required of the permittee pursuant to this Code section or pursuant to the conditions contained in a permit granted hereunder, the director may revoke the user's permit, in whole or in part, permanently or temporarily;

(2) For any willful violation of the conditions of a permit granted pursuant to this Code section, the director may revoke the user's permit, in whole or in part, permanently or temporarily;

(3) For violation of any provision of this Code section, the director may revoke the permit, in whole or in part, for a period not to exceed one year;

(4) For nonuse of the water supply (or a significant portion thereof) allowed by the permit for a period of two consecutive years or more, the director may revoke the permit permanently, in whole or in part, unless the permittee can reasonably demonstrate that his nonuse was due to extreme hardship caused by factors beyond his control, except that this paragraph shall not apply to farm use permits issued pursuant to paragraph (3) of subsection (a) of this Code section after initial use has commenced;

(5) The director may revoke a permit permanently, in whole or in part, with the written consent of the permittee;

(6) The director may suspend or modify a permit, except farm use permits, if he should determine through inspection, investigation, or otherwise that the quantity of water allowed under the permit is greater than that needed by the permittee for the particular use upon which the application for permit was based or would prevent other applicants from reasonable use of surface waters, including farm uses;

(7) The director may suspend or modify a farm use permit if he should determine through inspection, investigation, or otherwise that the quantity of water allowed under the permit would prevent other applicants from reasonable use of surface waters for farm use; and

(8) Consistent with the considerations set forth in subsection (g) of this Code section, the director may revoke, suspend, or modify a permit for any other good cause consistent with the health and safety of the citizens of this state and with this article.

In the event of modification, suspension or revocation of a permit, the director shall serve written notice of such action on the permit holder and shall set forth in such notice the reason for such action.

(l) Emergency period of water shortage:

(1) Whenever it clearly appears to the director from specific facts shown by affidavits of any residents of the affected area of this state that an emergency period of water shortage exists within such area, so as to place in jeopardy the health or safety of the citizens of such area or to threaten serious harm to the water resources of the area, he may by emergency order impose such restrictions on one or more permits previously issued pursuant to this Code section as may be necessary to adequately protect such citizens or water resources; provided, however, such order shall not be issued until an effort has been made to give written notice of the proposed action by certified mail to the permittee or permittees to be affected. Such written notice

shall allow such permittee or permittees five days from the date of mailing of the notice to appear before the director in opposition to the proposed action. The director may impose such restrictions based upon any reasonable system of classification established by the Board of Natural Resources through rule or regulation. Such system of classification shall be based upon but not necessarily limited to those factors set forth in subsection (e) of this Code section:

(2) The director shall specify in such order any change in the conditions of the permit, any suspension of the permit, or any other restriction on withdrawal, diversion, or impoundment of surface waters for the duration of the emergency water shortage and shall serve same on the person by hand delivery or certified mail. Except as to farm uses, any such change, suspension, or other restriction shall be effective immediately upon receipt of such order by the permittee, his agent for service of process, or any agent or employee of the permittee who receives the notification at the permittee's principal place of business in the state. Any permittee, other than a farm use permittee, to whom such order is directed shall comply therewith immediately. Upon application to a hearing officer appointed by the Board of Natural Resources of this state, a permittee, including a farm use permittee, shall be afforded a hearing within 20 days of receipt of such notice by the hearing examiner in accordance with subsection (c) of Code Section 12-2-2. Farm use permittees may continue to make use of water to their permitted capacity during the appeal process, but failure to timely request a hearing in accordance with subsection (c) of Code Section 12-2-2 shall waive such right;

(3) During emergency periods of water shortage, the director shall give first priority to providing water for human consumption and second priority to farm use;

(4) The importance and necessity of water for industrial purposes are in no way modified or diminished by this Code section; and

(5) Upon expiration of the emergency period of water shortage, as determined by the director, the director shall immediately notify each affected permittee, in writing, of such expiration, and the permittees shall thereafter be authorized to operate under the permit as issued prior to the emergency period of water shortage.

(m) Except for farm use permits issued pursuant to paragraph (3) of subsection (a) of this Code section, whenever required to carry out the objectives of this Code section, including but not limited to determining whether or not any person is in violation of any provision of this Code section or any rule or regulation promulgated pursuant hereto; encouraging or ensuring compliance with any provision of this Code section or any rule or regulation promulgated pursuant hereto; determining whether or not any person is in violation of any permit condition; or establishing a data bank on the usage of surface waters in a particular area or areas of this state, the director may by order, permit, or otherwise, in writing, require any person holding a permit under this Code section, or any other person who the director reasonably believes is withdrawing, diverting, or impounding surface waters in violation of the permitting requirements of this Code section, to:

(1) Establish and maintain records;

(2) Make reports;

(3) Install, use, and maintain monitoring equipment or methods; and

(4) Provide such other information as the director may reasonably require.

Notwithstanding the foregoing provisions of this subsection, any demand for such information by the director, which information has already been provided to the director by such person in the context of prior dealings with the division, and which is still correct, may be satisfied by adequate reference to same.

(n) In the consideration of applications for permits which if granted would authorize the withdrawal and transfer of surface waters across natural basins, the director shall be bound by the following requirements:

(1) The director shall give due consideration to competing applications for permits which would not involve interbasin transfers of surface water and, subject to subsection (e) of this Code section, shall endeavor to allocate a reasonable supply of surface waters to such applicants;

(2) The director shall provide a press release regarding the issuance of all permits authorizing such interbasin transfer of surface waters to newspapers of general circulation in all areas of the state which would be affected by such issuance. The press release shall be provided at least seven days before the issuance of these permits. If the director should determine that sufficient public interest warrants a public hearing on the issuance of these permits, he shall cause such a hearing to be held somewhere in the area affected prior to the issuance of these permits.

(o)(1) Except as otherwise provided in subsection (l) of this Code section for emergency orders, any person who is aggrieved or adversely affected by any order or action of the director pursuant to this Code section shall, upon petition within 30 days after the issuance of such order or the taking of such action, have a right to a hearing before an administrative law judge appointed by the Board of Natural Resources. The hearing before the administrative law judge shall be conducted in accordance with Chapter 13 of Title 50, the "Georgia Administrative Procedure Act," and the rules and regulations adopted by the board pursuant thereto. Any administrative law judge so appointed by the board shall fully meet and qualify as to all applicable conflict of interest requirements provided for in Section 304(h)(2)(D) of the Federal Water Pollution Control Act of 1972, as amended, and the rules, regulations, and guidelines promulgated thereunder. The decision of the administrative law judge shall constitute the final decision of the board. Any party to the hearing, including the director, shall have the right of judicial review thereof in accordance with Chapter 13 of Title 50, including the right to seek judicial review in the superior court of the county of the applicant's or permittee's residence.

(2) Persons are "aggrieved or adversely affected" where the challenged action has caused or will cause them injury in fact and where the injury is to an interest within the zone of interests to be protected or regulated by the statutes that the director is empowered to administer and enforce. In the event the director asserts in response to the petition before the administrative law judge that the petitioner is not aggrieved or adversely affected, the administrative law judge shall take evidence and hear arguments on this issue and thereafter make a ruling on this issue before continuing with the hearing. The burden of going forward with evidence on this issue shall rest with the petitioner.

12-5-32. The division shall be the water pollution control and surface-water resource management agency of the state for all purposes of any federal water pollution control act or any other federal act within the purview of this article and may:

(1) Take all necessary or appropriate action to obtain for the state the benefits of any federal act within the purview of this article;

(2) Apply for, receive, and use federal funds made available under any federal act within the purview of this article;

(3) Approve projects for which loans or grants under any federal act are made to any municipality, county, or agency of state government or to any private person or entity;

(4) Participate through its authorized representatives in proceedings under any federal act within the purview of this article and recommend measures for the reduction of water pollution originating within the state or proper management of the state's surface-water resources;

(5) Receive and expend on behalf of the state all funds which are now or which may hereafter become available or allotted to the State of Georgia by virtue of any appropriation or act of Congress or regulation of the federal government, its agencies and instrumentalities, or by virtue of any appropriation by the General Assembly, for water quality control, management, and allocation of the state's surface-water resources within the purview of this article, or for any other purpose defined in this article to be administered by the division as provided in this article. The division is authorized to use so much of funds as may be appropriated by the General Assembly for the purpose of matching federal grants as may be necessary to secure such grants and derive the advantage to the state of benefits contemplated under the terms of such grants, and to comply with the terms of such grants.

12-5-33. (a) The division is authorized to make grants, as funds are available, to any county, municipality, or any combination thereof, or to any public authority, agency, commission, or institution, to assist them in the construction of those portions of water pollution control projects which qualify for federal aid and assistance under the provisions of Title II of the Federal Water Pollution Control Act Amendments of 1972 (P.L. 92-500), 33 U.S.C. Section 1281, et seq., as amended by the Clean Water Act of 1977 (P.L. 95-217) or as may hereafter be amended.

(b) The State of Georgia is further authorized to make grants as funds are available to any county, municipality, or any combination of the same, or to any public authority, agency, commission, or institution, by appropriate action of the General Assembly, with or without qualification for federal aid and assistance as set fort in subsection (a) of this Code section, where the need of such county, municipality, or combination thereof, or such public authority, agency, commission, or institution, is shown.

12-5-34. (a) The state's contribution toward the construction of water pollution control projects shall not be limited by percentage contribution, and the State of Georgia may make grants to counties, municipalities, or combinations thereof in any amount up to the full cost of the construction of such projects where local need is shown and where such funds are available.

(b) State funds may be provided for such projects or portions of projects wherever the need may exist in conjunction with or in addition to federal grants as might be received under Title II of the Federal Water Pollution Control Act Amendments of 1972 (P.L. 92-500), 33 U.S.C. Section 1281, et seq., as amended by the Clean Water Act of 1977 (P.L. 95-217), or as such acts may hereafter be amended.

12-5-35. The division shall be the agency for the administration of the funds granted by the state. The administration of such granted funds shall be done in direct conjunction with the administration of federal funds granted for water pollution control projects.

12-5-36. The determination of the relative need for, the priority of, and the standards of construction for federally assisted water pollution control projects shall be consistent with the provisions of Title II of the Federal Water Pollution Control Act Amendments of 1972 (P.L. 92-500), 33 U.S.C. Section 1281, et seq., as amended by the Clean Water Act of 1977 (P.L. 95-217), or as may hereafter be amended.

12-5-37. It is the intent of this article that full advantage be taken of all funds available under the Federal Water Pollution Control Act, but the State of Georgia shall not be limited in its contribution, and where no funds are available under the Federal Water Pollution Control Act, the State of Georgia shall be authorized to appropriate funds for the alleviation of pollution problems and for the construction of water pollution control projects throughout the State of Georgia as the need may be shown by the counties, municipalities, or combinations thereof, or any public authority, agency, commission, or institution. Such grants by the state may be made for specific communities or for water pollution control projects to be determined by the division and administered by it.

12-5-38. The division is authorized to manage the construction grants program as set forth in Title II of the Federal Water Pollution Control Act Amendments of 1972 (P.L. 92-500), 33 U.S.C. Section 1281, et seq., as amended by the Clean Water Act of 1977 (P.L. 95-217), or as may hereafter be amended, upon receiving delegation of such program from the administrator of the federal Environmental Protection Agency. The division shall manage such program in accordance with the requirements and conditions set forth in Title II of the Federal Water Pollution Control Act Amendments of 1972, as amended.

12-5-38.1. (a) The director is authorized to administer funds granted to the state by the administrator of the federal Environmental Protection Agency pursuant to Title II of the federal Water Pollution Control Act, as now or hereafter amended, for the purpose of providing assistance to municipalities, counties, or any combination thereof or to any public authority, agency, commission, or institution for construction of treatment works as that term is defined in Section 212 of the federal Clean Water Act of 1977, P.L. 95-217, which are publicly owned.

(b) Any such funds received from the administrator of the federal Environmental Protection Agency shall be deposited in a water pollution control revolving fund established by the director. In addition to such federal funds, other nonfederal funds may be deposited in such revolving fund as they become available to the division. The forms of revolving fund assistance and the manner of administering such fund shall be determined in accordance with rules

and regulations promulgated by the Board of Natural Resources.

(c) The director is authorized to contract with any other state agency, authority, board, or commission for the purpose of providing for the management, investment, and disbursement of all funds deposited in the water pollution control revolving fund.

12-5-39. The division is authorized to develop and operate a continuing areawide waste treatment management planning process pursuant to its powers contained in this article for all portions of the state for which the state is required to act as the planning agency in accordance with Section 208 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. Section 1288, as amended by the Clean Water Act of 1977 (P.L: 95-217). With regard to any program submitted by the Governor pursuant to subsection 208(b)(4)(A) of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. Section 1288, as amended by the Clean Water Act of 1977 (P.L. 95-217), the director is empowered with the authority to take such action to comply with the requirements of subsections 208(b)(4)(B)(i) through (v) of such act.

12-5-40. The Board of Natural Resources is empowered to adopt such rules, regulations, and procedures to be followed in applying for state grants authorized in this article as shall be necessary for the effective administration thereof.

12-5-41. The department is authorized to expend funds appropriated or available to the department for the acquisition, construction, development, extension, enlargement, or improvement of water and sewage treatment facilities or systems to serve planned communities which have been certified as eligible for state development assistance under Code Section 45-12-170. Such funds may come from appropriations of the General Assembly for such purpose, or general obligation bonds may be issued for funds for such purpose. The department may require as a condition of such development assistance that provision be made for the purchase by the appropriate local government of such facilities or improvements for an amount up to the amount of such funds expended by the department plus accrued interest. The department and local governments may also enter into agreements whereby such projects are leased to the appropriate local government, provided that such lease payments, exclusive of payments for operating costs, shall be included in the total amount necessary to purchase such projects.

12-5-42. (a) Whenever the division determines that any person is discharging sewage, industrial waste, or other wastes into any waters of the state in a degree which prevents the water from meeting the established standards of water purity, the division shall act to secure the person's cooperation in the reduction or elimination of the detrimental effects of the discharge.

(b) The division shall supply to the person causing the pollution such technical and scientific information as may be helpful in reducing or eliminating the polluting effects of the discharge, but the responsibility for development and application of means of preventing pollution rests with the person causing the pollution.

(c) Whenever any person refuses to cooperate with the efforts of the director to reduce pollution, the director may issue an order to bring about the reduction or elimination of the pollution. Any order issued by the director under this article shall become final unless the person aggrieved requests in writing a hearing before the director no later than 30 days after such order is served. However, before issuing or enforcing such an order, the director shall allow any person a reasonable time to make the necessary financial arrangements or make other necessary preparations for the elimination fo the pollution.

(d) Whenever the division determines that a violation of any provision of this article or any rule or regulation promulgated pursuant to this article relating to the withdrawal, diversion, or impoundment of surface water has occurred, the division shall by conference, conciliation, or persuasion attempt to convince the violator to cease such violation. If in the opinion of the director such efforts fail, the director may issue an order to bring about the cessation of such violation. Such order shall specify the alleged violation and shall prescribe a reasonable time for corrective action to be accomplished. Any order issued pursuant to this subsection shall become final unless the person aggrieved requests a hearing in writing before the director not later than 30 days after such order is served.

12-5-43. (a) Whenever a person is aggrieved or adversely affected by any action or by any order or orders of the director, or by any action or by any order or orders pursuant to authority delegated by the director, such person may request and obtain a hearing by filing a petition with the Director no later than 30 days after such order or notice of action is served upon such person. Code Section 50-13-13 shall apply insofar as it is applicable to the administrative procedure necessary under this article.

(b) Code Sections 50-13-15 through 50-13-17 shall apply to all hearings held under this article.

12-5-44. (a) Any person who has exhausted all administrative remedies available within the department and who is aggrieved by a final decision in a contested case is entitled to judicial review under this article. A preliminary, procedural, or intermediate action or ruling is immediately reviewable if review of the final decision would not provide an adequate remedy. In this connection, all proceedings for judicial review shall be in accordance with Code Section 50-13-19.

(b) The division or any other party to the proceeding may secure a review of the final judgment of the superior court to the appellate courts of this state.

12-5-45. The division may file in the superior court in the county in which the person under order resides, or in the county in which the violation occurred or, if the person is a corporation, in the county in which the corporation maintains its principal place of business, a certified copy of a final order of the director, or the administrative law judge unappealed from or of a final order of the administrative law judge affirmed upon appeal, whereupon the court shall render judgment in accordance therewith and notify the parties. The judgment shall have the same effect, and all proceedings in relation thereto shall thereafter be the same, as though the judgment has been rendered in an action duly heard and determined by the court.

12-5-46. Nothing in this article shall be construed to alter or abridge any right of action existing in law or equity, civil or criminal, nor shall any provision of this article be construed to prevent any person,

as a riparian owner or otherwise, from exercising his rights to suppress nuisances or to abate any pollution.

12-5-47. Whenever the division finds that an emergency exists requiring that such action be taken as it deems necessary to meet the emergency, notwithstanding any other provisions of this article, such order shall be effective immediately. Any person to whom such order is directed shall comply therewith immediately but, on application to the division, shall be afforded a hearing as soon as possible. On the basis of such hearing, the division shall continue such order in effect, revoke it, or modify it.

12-5-48. Whenever in the judgment of the division any person has engaged in or is about to engage in any act or practice which constitutes or will constitute any violation of this article, the division may make application to the superior court of the county where such person resides, or if nonresident of this state, then to the superior court of the county where such person is engaged in or is about to engage in such act or practice, for an order enjoining and restraining such act or practice. Upon a showing by the division that such person has engaged in or is about to engage in any such act or practice, a permanent or temporary injunction, restraining order, or other order shall be granted without the necessity of showing a lack of adequate remedy at law.

12-5-49. It shall be the duty of the Attorney General to represent the division and its agents or designate some member of his staff to represent them in all actions in connection with this article.

12-5-50. Nothing in this article is intended to conflict with any provision of federal law or result in loss of eligibility for any federal funds on the part of the division or any department of state government. In case such a conflict or loss of federal funds should occur by virtue of enactment of any portion of this article, then the division is authorized and empowered to take such action as may be necessary and to effect such changes within the division as may be necessary to prevent loss of such funds to the division or any department of state government affected and to secure to the same the full benefit of the federal laws.

12-5-51. (a) Any person who intentionally or negligently causes or permits any sewage, industrial wastes, or other wastes, oil, scum, floating debris, or other substance or substances to be spilled, discharged, or deposited in the waters of the state, resulting in a condition of pollution as defined by this article, shall be liable in damages to the state and any political subdivision thereof for any and all costs, expenses, and injuries occasioned by such spills, discharges, or deposits. The amount of the damages assessed pursuant to this Code section shall include, but shall not be limited to, any costs and expenses reasonably incurred by the state or any political subdivision thereof, as the case may be, in cleaning up and abating such spills, discharges, or deposits, and any costs and expenses reasonably incurred in replacing aquatic life destroyed by such spills, discharges, or deposits. Damages to the state shall be recoverable in a civil action instituted in the name of the Environmental Protection Division of the Department of Natural Resources and shall be paid into the state treasury to the credit of the general fund. Damages to a political subdivision shall be recoverable in a civil action instituted by such subdivision.

(b) Any person who intentionally, negligently, or accidentally causes or permits any toxic, corrosive, acidic, caustic, or bacterial substance or substances to be spilled, discharged, or deposited in the waters of the state, except by providential cause, in amounts, concentrations, or combinations which are harmful to the public health, safety, or welfare, or to animals, birds, or aquatic life, shall be strictly liable in damages to the state and any political subdivision thereof for any and all costs, expenses, and injuries occasioned by such spills, discharges, or deposits. Damages to the state shall be recoverable in a civil action instituted in the name of the Environmental Protection Division of the Department of Natural Resources and shall be paid into the state treasury to the credit of the general fund. Damages to a political subdivision shall be recoverable in a civil action instituted by such subdivision.

12-5-52. (a) Any person violating any provision of this article or any permit condition or limitation established pursuant to this article or, negligently or intentionally, failing or refusing to comply with any final or emergency order of the director issued as provided in this article, shall be liable to a civil penalty not to exceed \$50,000.00 per day for each day during which such violation continues; provided, however, that a separate and later incident creating a violation within a 12 month period shall be liable for a civil penalty not to exceed \$100,000.00 per day for each day during which such violation continues.

(b) The director, after a hearing, shall determine whether or not any person has violated any provision of this article or has, negligently or intentionally, failed or refused to comply with any final or emergency order of the director and may, upon a proper finding, issue his order imposing such civil penalties as provided in this Code section. Any person so penalized under this Code section is entitled to judicial review. In this connection, all hearings and proceedings for judicial review under this Code section shall be in accordance with Code Section 12-5-44. All penalties recovered by the director as provided by this article shall be paid into the state treasury to the credit of the general fund.

12-5-53. (a) Any person who violates any provision of this article or any permit condition or limitation established pursuant to this article or who fails, neglects, or refuses to comply with any final order of a court lawfully issued as provided in this article, or who violates any requirement imposed in a pretreatment program approved by the director or who introduces into a sewer system or into a publicly owned treatment works any pollutant or hazardous substance which causes or may reasonably be anticipated to cause personal injury or property damage or which causes such treatment works to violate any effluent limitation or condition in any permit issued to the treatment works pursuant to this article, shall be guilty of a misdemeanor and, upon conviction thereof, shall be fined not less than \$2,500.00 per day nor more than \$25,000.00 per day of violation, or imprisoned no more than one year, or both. If the conviction is for a violation committed after a first conviction of such person under this subsection, punishment shall be by a fine of not more than \$50,000.00 per day of violation, by

imprisonment for not more than two years, or both.

(b) Any person who knowingly makes any false statement, representation, or certification in any application, record, report, plan, or other document filed or required to be maintained by this article or by any permit, rule, regulation, or order issued under this article, or who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained by this article or by any permit, rule, regulation, or order issued under this article, shall be guilty of a felony and, upon conviction thereof, shall be fined not more than $10,000.00, imprisoned not more than two years, or both. If the conviction is for a violation committed after a first conviction of such person under this subsection, punishment shall be by a fine of not more than $20,000.00 per day of violation, or by imprisonment for not more than four years, or both.

(c) Any person who knowingly violates any provision of this article or any permit condition or limitation established pursuant to this article or who knowingly fails, neglects, or refuses to comply with any final order of a court lawfully issued as provided in this article or who knowingly violates any requirement imposed in a pretreatment program approved by the director or who knowingly introduces into a sewer system or into a publicly owned treatment works any pollutant or hazardous substance which causes or may reasonably be anticipated to cause personal injury or property damage or which causes such treatment works to violate any effluent limitation or condition in any permit issued to the treatment works pursuant to this article shall be guilty of a felony and, upon conviction thereof, shall be punished by a fine of not less than $5,000.00 per day nor more than $50,000.00 per day of violation or by imprisonment for not more than two years, or both. If the conviction is a violation committed after the first conviction of such person under this subsection, punishment shall be by a fine of not more than $100,000.00 per day of violation or by imprisonment for not more than four years, or both.

(d) Any person who knowingly violates any provision of this article or any permit condition or limitation established pursuant to this article or who knowingly fails, neglects, or refuses to comply with any final order of a court lawfully issued as provided in this article and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury shall be guilty of a felony and, upon conviction thereof, shall be punished by a fine of not more than $250,000.00 or imprisonment of not more than 15 years, or both. A defendant that is an organization shall, upon conviction of violating this subsection, be subject to a fine of not more than $1 million. The following provisions apply for the purpose of this subsection:

(1) In determining whether a defendant who is an individual knew that his conduct placed another person in imminent danger of death or serious bodily injury, the person is responsible only for actual awareness or actual belief that he possessed, and knowledge possessed by a person other than the defendant but not by the defendant himself may not be attributed to the defendant; except that in proving the defendant's possession of actual knowledge, circumstantial evidence may be used, including evidence that the defendant took affirmative steps to shield himself from relevant information;

(2) It is an affirmative defense to prosecution that the conduct charged was consented to by the person endangered and that the danger and conduct charged were reasonably foreseeable hazards of an occupation, a business, a profession, medical treatment, or medical or scientific experimentation conducted by professionally approved methods and that the person endangered had been made aware of the risks involved prior to giving consent. Such defense must be established by the preponderance of the evidence;

(3) The term 'organization' means a legal entity, other than a government, established or organized for any purpose, and such term includes a corporation, company, association, firm, partnership, joint stock company, foundation, institution, trust, society, union, or any other association of persons; and

(4) The term 'serious bodily injury' means bodily injury which involves a substantial risk of death, unconsciousness, extreme physical pain, protracted and obvious disfigurement, or protracted loss or impairment of the function of a bodily member, organ, or mental faculty.

(e) It shall be an affirmative defense under subsections (a) and (c) of this Code section that the introduction of any pollutant or hazardous substance into a sewer system or a publicly owned treatment works was in compliance with all applicable federal, state, and local requirements which govern the introduction of a pollutant or hazardous substance into a sewer or publicly owned treatment works.

APPENDIX B
ROBINS AIR FORCE BASE NOTICE OF INTENT (NOI)

Please print or type in the unshaded areas only (fill—in areas are spaced for elite type, i.e., 12 characters/inch).

Form Approved. OMB No. 2040-0086. Approval expires 5-31-92.

FORM 1 GENERAL — EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY

GENERAL INFORMATION

Consolidated Permits Program

(Read the "General Instructions" before starting.)

I. EPA I.D. NUMBER

F GA0002852 D

LABEL ITEMS

I. EPA I.D. NUMBER

III. FACILITY NAME

V. FACILITY MAILING ADDRESS

VI. FACILITY LOCATION

PLEASE PLACE LABEL IN THIS SPACE

GENERAL INSTRUCTIONS

If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill—in area below. Also, if any of the preprinted data is absent *(the area to the left of the label space lists the information that should appear)*, please provide it in the proper fill—in area(s) below. If the label is complete and correct, you need not complete Items I, III, V, and VI *(except VI-B which must be completed regardless)*. Complete all items if no label has been provided. Refer to the instructions for detailed item descriptions and for the legal authorizations under which this data is collected.

II. POLLUTANT CHARACTERISTICS

INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of bold—faced terms.

SPECIFIC QUESTIONS	YES	NO	FORM ATTACHED	SPECIFIC QUESTIONS	YES	NO	FORM ATTACHED
A. Is this facility a publicly owned treatment works which results in a discharge to waters of the U.S.? (FORM 2A)		X		B. Does or will this facility *(either existing or proposed)* include a concentrated animal feeding operation or aquatic animal production facility which results in a discharge to waters of the U.S.? (FORM 2B)		X	
C. Is this a facility which currently results in discharges to waters of the U.S. other than those described in A or B above? (FORM 2C)	X			D. Is this a proposed facility *(other than those described in A or B above)* which will result in a discharge to waters of the U.S.? (FORM 2D)		X	
E. Does or will this facility treat, store, or dispose of hazardous wastes? (FORM 3)	X			F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)		X	
G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)		X		H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)		X	
I. Is this facility a proposed stationary source which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		X		J. Is this facility a proposed stationary source which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		X	

III. NAME OF FACILITY

1 SKIP ROBINS AIR FORCE BASE

IV. FACILITY CONTACT

A. NAME & TITLE (last, first, & title)	B. PHONE (area code & no.)
2 POLITINO SCHAWN WR-ALC/EMC	912 926 9777

V. FACILITY MAILING ADDRESS

A. STREET OR P.O. BOX

3 WR-ALC/EM

B. CITY OR TOWN	C. STATE	D. ZIP CODE
4 216 OCMULGEE CT, ROBINS AFB	GA	31098

VI. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER

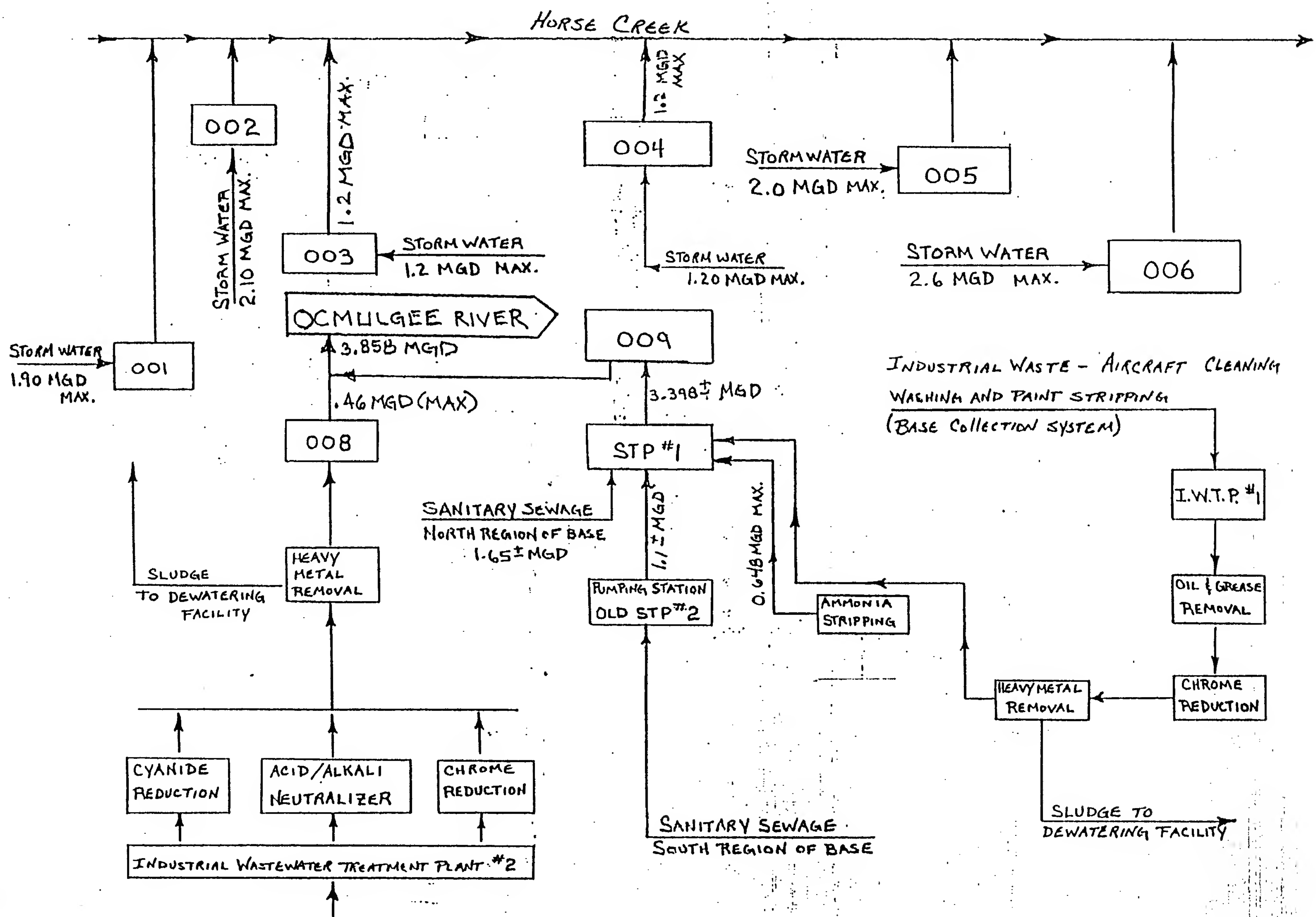
5 SAME

B. COUNTY NAME

HOUSTON

C. CITY OR TOWN	D. STATE	E. ZIP CODE	F. COUNTY CODE (if known)
6 WARNER ROBINS	GA	31098	

CONTINUE ON REVERSE



HORSE CREEK
001
STORM WATER 1.90 MGD MAX.
002
STORM WATER 2.10 MGD MAX.
003
1.2 MGD MAX.
STORM WATER 1.2 MGD MAX.
004
1.2 MGD MAX
STORM WATER 1.20 MGD MAX.
005
STORM WATER 2.0 MGD MAX.
006
STORM WATER 2.6 MGD MAX.
OCMULGEE RIVER
3.858 MGD
009
.46 MGD (MAX)
008
3.398± MGD
STP #1
SANITARY SEWAGE
NORTH REGION OF BASE 1.65± MGD
1.1± MGD
PUMPING STATION OLD STP #2
0.648 MGD MAX.
AMMONIA STRIPPING
SANITARY SEWAGE
SOUTH REGION OF BASE
INDUSTRIAL WASTE - AIRCRAFT CLEANING
WASHING AND PAINT STRIPPING
(BASE COLLECTION SYSTEM)
I.W.T.P. #1
OIL & GREASE REMOVAL
CHROME REDUCTION
HEAVY METAL REMOVAL
SLUDGE TO DEWATERING FACILITY
HEAVY METAL REMOVAL
SLUDGE TO DEWATERING FACILITY
CYANIDE REDUCTION
ACID/ALKALI NEUTRALIZER
CHROME REDUCTION
INDUSTRIAL WASTEWATER TREATMENT PLANT #2

OPERATIONS CONTRIBUTING POLLUTANTS TO IWTP #1 (009)

OPERATION (LOCATIONS)	AVERAGE FLOW (MG/YR)	CHEMICALS USED
Stripping: Buildings 50, 54, 137, 140, 158, 180, 680	42.0	Note 1
Paint Booths: Buildings 137, 140, 180, 670	0.84	Note 2
Wash Racks: Buildings 50, 54, 125, 137, 148, 190, 286, 304, 305, 319	48.0	Note 3
Steam Cleaning: Buildings 148, 180, 286, 319	0.3	Note 3
Machine Shop: Building 140	0.12	Note 4
Rinse Tanks: Buildings 140, 169, 180	0.636	Note 5
Printed Circuit Board Manufacturing: Buildings 640, 645	57.6	Note 6
Aircraft Toilets: Various	0.048	Note 7
Graphics Photo Lab: Building 301	0.645	Note 8

CHEMICALS USED

Note 1: Strippers

Methylene Chloride
Boric Acid
Sodium Nitrile
Ethanol
Phenol
Zinc Fluorosilicate
Phosphoric Acid
Ammonia
Chromium VI
Tributyl Amine
Hydrofluoric Acid

Note 2: Paints and Thinners:

Toluene
Cellosolve Acetate
(Ethylene Glycol,
Monoethyl Ether
Acetate, or
2-Ethoxyethyl Acetate
Methyl Isobutyl Keytone
Hexamethylene Diisocyanate
Methyl Ethyl Keytone
N-butyl Acetate
Dimethylformamide
Strontium Chromate
N-butanol
Lead Chromate
Zinc Chromate
Ethyl Acetate
Xylene
Titanium Dioxide
Isopropanol

Note 3: Cleaning Compounds (Aircraft soap)

13% Nonionic detergents (Nonylphenol Ethylene Oxide Condensate)
7% Sodium Dodecylbenzene Sulfonate
80% Water

Note 4: Cutting Oil (Ultra-synthet 951)

Triethanolamine
Diethanolamine
Hexylene Glycol

Note 5: Rinse Tanks

Aluminum Smut Remover
  Ferric Sulfate 40%-50%
Carbon Remover
  Butyl Cellosilie 10%
  Monoethanolamine 20%
Alkaline Cleaner
  Sodium Carbonate

Alodine
- Alumigold
- Nitric Acid
- Hydrofluric Acid
- Ferric Sulfate

Wheel Stripper
- Ethylene Glycol Monoethyl Either Acetate
- Ethanol Amine
- Diethylene Glycol Monomethyl Ether
- Ethylene Glycol Monobutyl Ether
- Heavy Petroleum Distillate

Alkaline Cleaner
- Sodium Hydroxide
- Trisodium Phosphate
- Sodium Metasilicate

Anodise Shop
- Alkali Soap
- Phosphoric Acid
- Sulphuric Acid
- Sodium Hydroxide
- Hydrochloric Acid

Developer
- Sodium Salts 65%
- Carbonyl Diamide 20%
- Nonionic Surfactants 0.4%

Penetrant
- Petroleum Distillates
- Kerosene

Emulsifier
- 1, Distillateanic 60%
- Terpineol 10%

Note 6: Printed Circuit Board Manufacturing

Sulfuric Acid	Hydrogen Peroxide
Mineral Acids	Sodium Hydroxide
Copper Sulfate	Cupracid GS818
Hydrochloric Acid	Solderon Acid
Solderon Tin	Solderon Lead

Note 7: Aircraft Toilets

Ethylene Glycol

Note 8

Sodium Bisulfite
Sodium Slufite
Sodium Acetate
Sulfuric Acid
Sodium Propionate
Propionic Acid
Substituted Thiazolin-3-one
Potasium Carbonate
Potassium Bromide
Substituted Stilbene
N,N-Diethylhydroxlamine
Potassium Sulfite
Ethylenediaminetetraacetic Acid
Hydroquinone
4-(Methylamino)Phenol Sulfate
Hydrobromic Acid
Sodium Gluteraldehyde Bisbisulfite
Formaldehyde
Sodium Metabisulfite
Lithium Cloride
Ethylene Glycol
Amonium Bromide

Glutaraldehyde bisbisulfite
Amonium Thiosulfate
Boric Acid
Alluminum Sulfate
Chelated Tin Phosphonate
Soduim Phosphonate
Nonionic Surfactant
Potassium Hydroxide
Triethanolamine
Sodium Bromide
Lithum Sulfate
Methanol
1-Thioglycerol
Sodium Tetraborate
boric Anhydride
Amonium
Benzyl Alcohol
Organo Silicone
Hydroxlamine Sulfate
Acetic Acid
Amonia

4-(N-Ethyl-N-2-Methanesulfonylaminoethyl)-2-Methylphenylenediamine Sesquisulfate Monohydrate

Potassium Hydroquinone Monosulfonate

p-Tertiary-octylphenoxy Polyethyl Alcohol

OPERATIONS CONTRIBUTING POLLUTANTS TO IWTP #2 (008)

Electroplating Shop

Complexed Cyanide
Sodium Silicate
Hydrochloric Acid
Sodium Potassium Tartrate
Potassium Cyanide
Sodium Stannate
Oxalic Acid
Sodium Dichromate
Phosphoric Acid
Cadmium Cyanide Compound
Sodium Metasilicate
Alumigold
  Part 1 - Chromic Acid
  Zinc fluosilicate
  Part 2 - Chromic Acid
Turco Smut Go
  Non Chromated
  Nitric Acid
  Hydrofluoric Acid
  Ferric Sulfate
Turco ARR
  Sodium Hydroxide
  Kerosene
Stripping: Methylene Chloride
Vapor Degreasing: 1,1,1 Trichloroethane containing
Trichloroethylene

Sodium Hydroxide
Sodium Cyanide
Copper Cyanide
Silver Cyanide
Nitro Acid
Sulfuric Acid
Chromic Acid
Zinc Phosphate
Nickel Sulfamate
Sodium Phosphate
Hydrofluoric Acid

APPENDIX C
STATE OF GEORGIA GENERAL PERMIT

General Permit
No. GAR000000

State of Georgia
Department of Natural Resources
Environmental Protection Division

Authorization To Discharge Under The National Pollutant Discharge Elimination System Storm Water Discharges Associated With Industrial Activity

In compliance with the provisions of the Georgia Water Quality Control Act (Georgia Laws 1964, p. 416, as amended), hereinafter called the "State Act," the Federal Clean Water Act, as amended (33 U.S.C.1251 et seq.), hereinafter called the "Clean Water Act," and the Rules and Regulations promulgated to each of these Acts, new and existing storm water point sources within the State of Georgia that are required to have a permit, upon submittal of a Notice of Intent, are authorized to discharge storm water associated with industrial activity to the waters of the State of Georgia in the accordance with the limitations, monitoring requirements and others conditions set forth in Parts I through VIII hereof.

This permit shall become effective on June 14, 1993.

This permit and the authorization to discharge shall expire at midnight, May 31, 1998.

Signed this 14th. day of June, 1993 .

Director,
Environmental Protection Division

NPDES GENERAL PERMIT
for
STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY

Part I. COVERAGE UNDER THIS PERMIT

A. Permit Area.
The permit covers all discharges of storm water associated with industrial activity from point sources to the waters of the State of Georgia.

B. Eligibility.

1. This permit may cover all new and existing point source discharges of storm water associated with industrial activity to waters of the State of Georgia, except for storm water discharges identified under paragraph I.B.3.

2. This permit may authorize storm water discharges associated with industrial activity that are mixed with storm water discharges associated with industrial activity from construction activities provided that the storm water discharge from the construction activity is in compliance with the terms, including applicable NOI or application requirements, of a different NPDES general permit or individual permit authorizing such discharges.

3. Limitations on coverage. The following storm water discharges associated with industrial activity are not authorized by this permit:

   a. storm water discharges associated with industrial activity that are mixed with sources of non-storm water other than non-storm water discharges that are:

   (i) in compliance with a different NPDES permit; or

   (ii) identified by and in compliance with Part III.A.2 (authorized non-storm water discharges) of this permit.

   b. storm water discharges associated with industrial activity which are subject to an existing effluent limitation guideline addressing storm water (or a combination of storm water and process water);

   c. storm water discharges associated with industrial activity that are subject to an existing NPDES individual or general permit, except for individual NPDES permits which authorize storm water discharges

under Part II.B.16 of the individual permit. Such discharges may be authorized under this permit after an existing permit expires provided the existing permit did not establish numeric limitations for such discharges;

d. storm water discharges associated with industrial activity from construction sites, except storm water discharges from portions of a construction site that can be classified as an industrial activity under 40 CFR 122.26(b)(14)(i) through (ix) or (xi) (including storm water discharges from mobile asphalt plant, and mobile concrete plants).

e. storm water discharges associated with industrial activity that the Director has determined to be or may reasonably be expected to be contributing to a violation of a water quality standard; and

f. storm water discharges associated with industrial activity from inactive mining, inactive landfills, or inactive oil and gas operations occurring on Federal lands where an operator cannot be identified.

4. Storm water discharges associated with industrial activity which are authorized by this permit may be combined with other sources of storm water which are not classified as associated with industrial activity pursuant to 40 CFR 122.26(b)(14), so long as the discharger is in compliance with this permit.

C. <u>Authorization</u>.

1. Dischargers of storm water associated with industrial activity must submit a Notice of Intent (NOI) in accordance with the requirements of Part II of this permit, using a NOI form provided by the Director (or photocopy thereof), to be authorized to discharge under this general permit.

2. Unless notified by the Director to the contrary, owners or operators who submit such notification are authorized to discharge storm water associated with industrial activity under the terms and conditions of this permit 48 hours after the date that the NOI is postmarked.

3. The Director may deny coverage under this permit and require submittal of an application for an individual NPDES permit based on a review of the NOI or other information.

D. Definitions.

The definitions set forth in Part X of EPA's NPDES Permit (FR 41319, September 9, 1992) authorizing storm water discharges from industrial sources are hereby incorporated by reference.

Part II. NOTICE OF INTENT REQUIREMENTS

A. Deadlines for Notification.

1. Except as provided in paragraphs II.A.4 (new operator) and II.A.5 (late NOIs), owners/operators who intend to obtain coverage for an existing storm water discharge associated with industrial activity under this general permit shall submit a Notice of Intent (NOI) in accordance with the requirements of this part sixty (60) days after the issuance of this permit;

2. Except as provided in paragraphs II.A.3 (oil and gas operations), II.A.4 (new operator), and II.A.5 (late NOI) operators of facilities which begin industrial activity after issuance of this permit shall submit a NOI in accordance with the requirements of this part at least 48 hours prior to the commencement of the industrial activity at the facility;

3. Operators of oil and gas exploration, production, processing, or treatment operations or transmission facilities, that are not required to submit a permit application as of October 1, 1992 in accordance with 40 CFR 122.26(c)(1)(iii), but that after October 1, 1992 have a discharge of a reportable quantity of oil or a hazardous substance for which notification is required pursuant to either Georgia's Oil or Hazardous Material Spills or Releases Act (O.C.G.A. §12-14-2), 40 CFR 110.6, 40 CFR 117.21 or 40 CFR 302.6, must submit a NOI in accordance with the requirements of Part II.C of this permit within 14 calendar days of the first knowledge of such release.

4. Where the operator of a facility with a storm water discharge associated with industrial activity which is covered by this permit changes, the new operator of the facility must submit an NOI in accordance with the requirements of this part at least 48 hours prior to the change.

5. An operator of a storm water discharge associated with industrial activity is not precluded from submitting an NOI in accordance with the requirements of this part after the dates provided in Parts II.A.1, 2, or 3 (above) of this

permit. In such instances, the Georgia Environmental Protection Division (EPD) may bring an enforcement action for failure to submit an NOI in a timely manner or for any unauthorized discharges of storm water associated with industrial activity that have occurred on or after the dates specified in Part II.A.1, 2, or 3 (above).

B. <u>Contents of Notice of Intent</u>. The Notice of Intent shall be signed in accordance with Part VII.G (signatory requirements) of this permit and shall include the following information:

1. Name, mailing address, county, and location of the facility for which the notification is submitted. Where a mailing address for the site is not available, the facility location can be described in narrative terms.

2. Up to four 4-digit Standard Industrial Classification (SIC) codes that best represent the principal products or for hazardous waste treatment, storage or disposal facilities, land disposal facilities that receive or have received any industrial waste, steam electric power generating facilities, or treatment works treating domestic sewage, an indication of those activities provided by the facility;

3. The operator's name, address, telephone number, and status as Federal, State, private, public or other entity;

4. The permit number of additional NPDES permits for any discharges (including non-storm water discharges) from the site that are currently authorized by an NPDES permit;

5. The name of the receiving water(s), or if the discharge is through a municipal separate storm sewer, the name of the municipal operator of the storm sewer and the receiving water(s) for the discharge through the municipal separate storm sewer;

6. An indication of whether the owner or operator has existing quantitative data describing the concentration of pollutants in storm water discharges (existing data should not be included as part of the NOI); and

7. An indication as to whether the facility has previously participated in the group application process. Where a facility has participated in a group application, the number EPA assigned to the group application shall be supplied.

C. <u>Where to Submit</u>. Facilities which discharge storm water associated with industrial activity must use a NOI form provided by the EPD Director (or photocopy thereof). Forms are available by calling (404) 656-6329. NOIs must be signed in accordance with Part VII.G (signatory requirements) of this permit. NOIs are to be submitted to the EPD Director at the following address:

Georgia Environmental Protection Division
Industrial Wastewater Program
Floyd Towers East, Room 1070
205 Butler Street, S.E.
Atlanta, Georgia 30334

D. <u>Additional Notification</u>. Facilities which discharge storm water associated with industrial activity through large or medium municipal separate storm sewer systems (systems located in an incorporated city with a population of 100,000 or more, or in a county identified as having a large or medium system) shall, in addition to filing copies of the Notice of Intent in accordance with paragraph II.C, also submit signed copies of the Notice of Intent to the operator of the municipal separate storm sewer through which they discharge in accordance with the deadlines in Part II.A (deadlines for notification) of this permit.

E. <u>Renotification</u>. Upon issuance of a new general permit for some or all of the discharges of storm water covered by this permit, the permittee is required to notify the Director of their intent to be covered by the new general permit. The permittee must submit a new NOI in accordance with the notification requirements of the new general permit.

Part III. SPECIAL CONDITIONS

A. <u>Prohibition on Non-storm Water Discharges</u>.

1. Except as provided in paragraph III.A.2 (below), all discharges covered by this permit shall be composed entirely of storm water.

2. a. Except as provided in paragraph III.A.2.b (below), discharges of material other than storm water must be in compliance with a NPDES permit (other than this permit) issued for the discharge.

   b. The following non-storm water discharges may be authorized by this permit provided the non-storm water component of the discharge is in compliance with the measures and controls for non-storm water discharges portion of the storm water pollution prevention plan:

discharges from fire fighting activities; fire hydrant flushing; potable water sources including waterline flushing; irrigation drainage; lawn watering; routine external building washdown which does not use detergents or other compounds; pavement washwaters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used; air conditioning condensate; springs; uncontaminated ground water; and foundation or footing drains where flows are not contaminated with process materials.

B. <u>Releases in Excess of Reportable Quantities</u>.

1. The discharge of hazardous substances or oil in the storm water discharge(s) from a facility shall be prevented or minimized in accordance with the applicable storm water pollution prevention plan for the facility. This permit does not relieve the permittee of the reporting requirements of Georgia's Oil or Hazardous Material Spills or Releases Act (O.C.G.A. §12-14-2), 40 CFR part 117 and 40 CFR part 302. Where a release containing a hazardous substance in an amount equal to or in excess of a reporting quantity established under either Georgia's Oil or Hazardous Material Spills or Releases Act (O.C.G.A. §12-14-2), 40 CFR 117 or 40 CFR 302, occurs during a 24 hour period:

   a. The discharger is required to notify EPD at (404) 656-4300 or 800-241-4113 and the National Response Center (NRC) at 800-424-8802 in accordance with the requirements of Georgia's Oil or Hazardous Material Spills or Releases Act (O.C.G.A. §12-14-2), 40 CFR 117 and 40 CFR 302 as soon as he or she has knowledge of the discharge;

   b. Unless specifically directed otherwise, the permittee shall submit within 14 calendar days of knowledge of the release a written description of: the release (including the type and estimate of the amount of material released), the date that such release occurred, the circumstances leading to the release, and steps to be taken in accordance with paragraph III.B.1.c (below) of this permit to EPD at the address provided in Part II.C of this permit and to Georgia's Emergency Response Team at:

      Emergency Response Team
      Georgia Environmental Protection Division
      Floyd Towers East, Room 1166
      205 Butler St., S.E.
      Atlanta, GA 30334; and

c. The Storm Water Pollution Prevention Plan required under Part IV (Storm Water Pollution Prevention Plan) of this permit must be modified within 14 calendar days of knowledge of the release to: provide a description of the release, the circumstances leading to the release, and the date of the release. In addition, the plan must be reviewed to identify measures to prevent the reoccurrence of such releases and to respond to such releases, and the plan must be modified where appropriate.

2. Spills. This permit does not authorize the discharge of hazardous substances or oil resulting from an on-site spill.

Part IV. STORM WATER POLLUTION PREVENTION PLANS

A Storm Water Pollution Prevention Plan shall be developed for each facility covered by this permit. Storm Water Pollution Prevention Plans shall be prepared in accordance with good engineering practices. The plan shall identify potential sources of pollution which may reasonably be expected to affect the quality of storm water discharges associated with industrial activity from the facility. In addition, the plan shall describe and ensure the implementation of practices which are to be used to reduce the pollutants in storm water discharges associated with industrial activity at the facility and to assure compliance with the terms and conditions of this permit. Facilities must implement the provisions of the Storm Water Pollution Prevention Plan required under this part as a condition of this permit.

A. Deadlines for Plan Preparation and Compliance.

1. Except as provided in paragraphs IV.A.2 and IV.A.3 (oil and gas operations), the plan for a storm water discharge associated with industrial activity that is existing prior to the issuance of this permit:

   a. shall be prepared no later than December 31, 1993 (and updated as appropriate);
   b. shall provide for implementation and compliance with the terms of the plan no later than May 31, 1994;

2. The plan for any facility where industrial activity commences after the issuance of this permit shall be prepared, and except as provided elsewhere in this permit, shall provide for compliance with the terms of the plan and this permit on or before the sixtieth (60th) calendar day after the commencement of industrial activity (and updated as appropriate);

3. The plan for storm water discharges associated with industrial activity from an oil and gas exploration, production, processing, or treatment operation or transmission facility that is not required to submit a permit application on or before October 1, 1992 in accordance with 40 CFR 122.26(c)(1)(iii), but after October 1, 1992 has a discharge of a reportable quantity of oil or a hazardous substance for which notification is required pursuant to either Georgia's Oil or Hazardous Material Spills or Releases Act (O.C.G.A. §12-14-2), 40 CFR 110.6, 40 CFR 117.21 or 40 CFR 302.6, shall be prepared and except as provided elsewhere in this permit, shall provide for compliance with the terms of the plan and this permit on or before the date 60 calendar days after the first knowledge of such release (and updated as appropriate); and

4. Upon a showing of good cause, the Director may establish a later date in writing for preparing and compliance with a plan for a storm water discharge associated with industrial activity that submits a NOI in accordance with Part II.A.2 (deadlines for notification - new dischargers) of this permit (and updated as appropriate).

B. <u>Signature and Plan Review</u>.

1. The plan shall be signed in accordance with Part VII.G (signatory requirements), and be retained on-site at the facility which generates the storm water discharge in accordance with Part VI.D (retention of records) of this permit.

2. The permittee shall make plans available upon request to the Director, or authorized representative, and in the case of a storm water discharge associated with industrial activity which discharges through a municipal separate storm sewer system, to the operator of the municipal system.

3. The Director, or authorized representative, may notify the permittee at any time that the plan does not meet one or more of the minimum requirements of this Part. Within thirty (30) days of such notification from the Director, (or as otherwise provided by the Director), or authorized representative, the permittee shall make the required changes to the plan and shall submit to the Director a written certification that the requested changes have been made.

C. Keeping Plans Current. The permittee shall amend the plan whenever there is a change in design, construction, operation, or maintenance, which has a significant effect on the potential for the discharge of pollutants to the waters of the State of Georgia or if the Storm Water Pollution Prevention Plan proves to be ineffective in eliminating or significantly minimizing pollutants from sources identified in this plan (description of potential pollutant sources), or in otherwise achieving the general objectives of controlling pollutants in storm water discharges associated with industrial activity. Amendments to the plan may be reviewed by EPD in the same manner as Part IV.B (above).

D. Contents of Plan. The plan shall be prepared in accordance with the requirements, guidelines, and recommendations in the U.S.Environmental Protection Agency document titled STORM WATER MANAGEMENT FOR INDUSTRIAL ACTIVITIES, DEVELOPING POLLUTION PREVENTION PLANS and BEST MANAGEMENT PRACTICES (SEPTEMBER 1992). The plan shall include, at a minimum, the following items:

1. Pollution prevention team. Each plan shall identify a specific individual or individuals within the facility organization as members of a storm water Pollution Prevention Team that are responsible for developing the plan and assisting the facility or plant manager in its implementation, maintenance, and revision. The plan shall clearly identify the responsibilities of each team member. The activities and responsibilities of the team shall address all aspects of the facility's plan.

2. Description of potential pollutant sources. Each plan shall provide a description of potential sources which may reasonably be expected to add significant amounts of pollutants to storm water discharges or which may result in the discharge of pollutants during dry weather from separate storm sewers draining the facility. Each plan shall identify all activities and significant materials which may potentially be significant pollutant sources. Each plan shall include, at a minimum:

a. *Drainage*.

(1) A site map indicating an outline of the portions of the drainage area of each storm water outfall that are within the facility boundaries, each existing structural control measure to reduce pollutants in storm water runoff, surface water bodies, locations where significant materials are exposed to precipitation, locations where major spills or leaks identified under Part IV.D.2.c (spills and leaks) of

this permit have occurred, and the locations of the following activities where such activities are exposed to precipitation: fueling stations, vehicle and equipment maintenance and/or cleaning areas, loading/unloading areas, locations used for the treatment, storage or disposal of wastes, liquid storage tanks, processing areas and storage areas.

(2) For each area of the facility that generates storm water discharges associated with industrial activity with a reasonable potential for containing significant amounts of pollutants, a prediction of the direction of flow, and an identification of the types of pollutants which are likely to be present in storm water discharges associated with industrial activity. Factors to consider include the toxicity of chemical; quantity of chemicals used, produced or discharged; the likelihood of contact with storm water; and history of significant leaks or spills of toxic or hazardous pollutants. Flows with a significant potential for causing erosion shall be identified.

b. *Inventory of exposed materials*. An inventory of the types of materials handled at the site that potentially may be exposed to precipitation. Such inventory shall include a narrative description of significant materials that have been handled, treated, stored or disposed in a manner to allow exposure to storm water between the time of three years prior to the date of the issuance of this permit and the present; method and location of on-site storage or disposal; materials management practices employed to minimize contact of materials with storm water runoff between the time of three years prior to the date of the issuance of this permit and the present; the location and a description of existing structural and non-structural control measures to reduce pollutants in storm water runoff; and a description of any treatment the storm water receives.

c. *Spills and leaks*. A list of significant spills and significant leaks of toxic or hazardous pollutants that occurred at areas that are exposed to precipitation or that otherwise drain to a storm water conveyance at the facility after the date of three years prior to the effective date of this permit. Such list shall be updated as appropriate during the term of the permit.

d. *Sampling data*. A summary of existing discharge sampling data describing pollutants in storm water discharges from the facility, including a summary of sampling data collected during the term of this permit.

e. *Risk identification and summary of potential pollutant sources*. A narrative description of the potential pollutant sources at the following areas: loading and unloading operations; outdoor storage activities; outdoor manufacturing or processing activities; significant dust or particulate generating processes; and on-site waste disposal practices. The description shall specifically list any significant potential source of pollutants at the site and for each potential source, any pollutant or pollutant parameter (e.g. biochemical oxygen demand, etc.) of concerns shall be identified.

3. Measures and controls. Each facility covered by this permit shall develop a description of storm water management controls appropriate for the facility, and implement such controls. The appropriateness and priorities of controls in a plan shall reflect identified potential sources of pollutants at the facility. The description of storm water management controls shall address the following minimum components, including a schedule for implementing such controls:

a. *Good housekeeping*. Good housekeeping requires the maintenance of areas which may contribute pollutants to storm waters discharges in a clean, orderly manner.

b. *Preventive maintenance*. A preventive maintenance program shall involve timely inspection and maintenance of storm water management devices (e.g. cleaning oil/water separators, catch basins) as well as inspecting and testing facility equipment and systems to uncover conditions that could cause breakdowns or failures resulting in discharges of pollutants to surface waters, and ensuring appropriate maintenance of such equipment and systems.

c. *Spill prevention and response procedures*. Areas where potential spills which can contribute pollutants to storm water discharges can occur, and their accompanying drainage points shall be identified clearly in the plan. Where appropriate, specifying material handling procedures, storage requirements, and use of equipment such as diversion valves in the plan should be considered. Procedures for cleaning up

spills shall be identified in the plan and made available to the appropriate personnel. The necessary equipment to implement a clean up should be available to personnel.

d. *Inspections*. In addition to or as part of the comprehensive site evaluation required under Part IV.D.4 (comprehensive site compliance evaluation) of this permit, qualified facility personnel shall be identified to inspect designated equipment and areas of the facility at appropriate intervals specified in the plan. A set of tracking or follow-up procedures shall be used to ensure that appropriate actions are taken in response to the inspections. Records of inspections shall be maintained.

e. *Employee training*. Employee training programs shall inform personnel responsible for implementing activities identified in the plan or otherwise responsible for storm water management at all levels of responsibility of the components and goals of the plan. Training should address topics such as spill response, good housekeeping and material management practices. The plan shall identify periodic dates for such training.

f. *Recordkeeping and internal reporting procedures*. A description of incidents such as spills, or other discharges, along with other information describing the quality and quantity of storm water discharges shall be included in the plan required under this part. Inspections and maintenance activities shall be documented and records of such activities shall be incorporated into the plan.

g. *Non-storm water discharges*.

(1) The plan shall include a certification that the discharge has been tested or evaluated for the presence of non-storm water discharges. The certification shall include the identification of potential significant sources of non-storm water at the site, a description of the results of any test and/or evaluation for the presence of non-storm water discharges, the evaluation criteria or testing method used, the date of any testing and/or evaluation, and the on-site drainage points that were directly observed during the test. Certifications shall be signed in accordance with Part VII.G of this permit. Such certification may not be feasible if the facility operating the storm water discharge associated with industrial activity does not

have access to an outfall, manhole, or other point of access to the ultimate conduit which receives the discharge. In such cases, the source identification section of the plan shall indicate why the certification required by this part was not feasible, along with the identification of potential significant sources of non-storm water at the site.

(2) Except for flows from fire fighting activities, sources of non-storm water listed in Part III.A.2 (authorized non-storm water discharges) of this permit that are combined with storm water discharges associated with industrial activity must be identified in the plan. The plan shall identify and ensure the implementation of appropriate pollution prevention measures for the non-storm water component(s) of the discharge.

h. *Sediment and erosion control.* The plan shall identify areas which, due to topography, activities, or other factors, have a high potential for significant soil erosion, and identify structural, vegetative, and/or stabilization measures to be used to limit erosion.

i. *Management of runoff.* The plan shall contain a narrative consideration of the appropriateness of traditional storm water management practices (practices other than those which control the generation or source(s) of pollutants) used to divert, infiltrate, reuse, or otherwise manage storm water runoff in a manner that reduces pollutants in storm water discharges from the site. The plan shall provide that measures determined to be reasonable and appropriate shall be implemented and maintained. The potential of various sources at the facility to contribute pollutants to storm water discharges associated with industrial activity (see Parts IV.D.2. (description of potential pollutant sources) of this permit) shall be considered when determining reasonable and appropriate measures. Appropriate measures may include: vegetative swales and practices, reuse of collected storm water (such as for a process or as an irrigation source), inlet controls (such as oil/water separators), snow management activities, infiltration devices, and wet detention/retention devices.

4. Comprehensive site compliance evaluation/inspection. Qualified personnel shall conduct site compliance evaluations and inspection at appropriate intervals specified in the plan, but except as provided in this part, in no case less than once a year. Such evaluations shall provide:

a. Areas contributing to a storm water discharge associated with industrial activity shall be visually inspected for evidence of, or the potential for, pollutants entering the drainage system. Measures to reduce pollutant loadings shall be evaluated to determine whether they are adequate and properly implemented in accordance with the terms of the permit or whether additional control measures are needed. Structural storm water management measures, sediment and erosion control measures, and other structural pollution prevention measures identified in the plan shall be observed to ensure that they are operating correctly. A visual inspection of equipment needed to implement the plan, such as spill response equipment, shall be made.

b. Based on the results of the inspection, the description of potential pollutant sources identified in the plan (description of potential pollutant sources) and pollution prevention measures and controls identified (measures and controls) shall be revised as appropriate within thirty (30) days of such inspection and shall provide for implementation of any changes to the plan in a timely manner, but in no case more than three (3) months after the inspection.

c. A report summarizing the scope of the inspection, personnel making the inspection, the date(s) of the inspection, major observations relating to the implementation of the plan, and actions taken in accordance with paragraph IV.D.4.b (above) of the permit shall be made and retained as part of the plan for at least one year after coverage under this permit terminates. The report shall identify any incidents of noncompliance. Where the report does not identify any incidents of noncompliance, the report shall contain a certification that the facility is in compliance with the Storm Water Pollution Prevention Plan and this permit. The report shall be signed in accordance with Part VII.G (signatory requirements) of this permit. This report shall not be submitted to the Director unless specifically requested in writing.

d. Where annual site inspections are shown in the plan to be impractical for inactive mining sites due to the remote location and inaccessibility of the site, site inspections required under this part shall be conducted at appropriate intervals specified in the plan, but, in no case less than once in three years.

5. <u>Additional requirements for storm water discharges associated with industrial activity through municipal separate storm sewer systems serving a population of 100,000 or more</u>.

a. In addition to the applicable requirements of this permit, facilities covered by this permit must comply with applicable requirements in municipal storm water management programs developed under NPDES permits issued for the discharge of the municipal separate storm sewer system that receives the facility's discharge.

b. Permittees which discharge storm water associated with industrial activity through a municipal separate storm sewer system serving a population of 100,000 or more shall make plans available to the municipal operator of the system upon request.

6. <u>Consistency with other plans</u>. Storm Water Pollution Prevention Plans may reflect requirements for Spill Prevention Control and Countermeasure (SPCC) plans developed for the facility under Section 311 of the CWA or Best Management Practices (BMP) Programs otherwise required by an NPDES permit for the facility as long as such requirement is incorporated into the Storm Water Pollution Prevention Plan.

7. <u>Additional requirements for salt storage</u>. Storage piles of salt used for deicing or other commercial or industrial purposes and which generate a storm water discharge associated with industrial activity which is discharged to the waters of Georgia shall be enclosed or covered to prevent exposure to precipitation, except for exposure resulting from adding or removing materials from the pile. Dischargers shall demonstrate compliance with this provision as expeditiously as practicable, but in no event later than three years after issuance of this permit. Piles do not need to be enclosed or covered where storm water from the pile is not discharged to the waters of Georgia.

Part V. NUMERIC EFFLUENT LIMITATION

<u>Coal Pile Runoff</u>. Any discharge composed of coal pile runoff shall not exceed a maximum concentration for any time of 50 mg/L Total Suspended Solids. Coal pile runoff shall not be diluted with storm water or other flows in order to meet this limitation. The pH of such discharges shall be within the range of 6.0-9.0. Any untreated overflow from facilities designed, constructed and operated to treat the volume of coal pile runoff which is associated with a 10

year, 24 hour rainfall event shall not be subject to the 50 mg/L limitation for Total Suspended Solids. Failure to demonstrate compliance with these limitations as expeditiously as practicable, but in no case later than three years after the date of issuance of this permit will constitute a violation of this permit.

Part VI. MONITORING AND REPORTING REQUIREMENTS

A. Monitoring Requirements.

1. Limitations on monitoring requirements. Those facilities identified in Parts VI.A.2.a through j (annual monitoring requirements) of this permit are required to conduct sampling of their storm water discharges associated with industrial activity. Facilities other than those identified in Parts VI.A.2.a through j of this permit are not required to monitor their storm water discharges associated with industrial activity. The Director can provide written notice to any facility with coverage under this permit to conduct sampling of their storm water discharges associated with industrial activity on a schedule specified by the Director.

2. Monitoring requirements. During the period beginning on the effective date and lasting through the expiration date of this permit, permittees with facilities identified in Parts VI.A.2.a through j must monitor at least annually (once per year), except as provided in Parts VI.A.4 (representative discharge), VI.A.5 (sampling waiver), and VI.B (toxicity testing), those storm water discharges identified below to document the presence of any pollutants. Permittees are not to submit monitoring results to EPD, unless specifically required in writing by the Director. However, the permittee must retain monitoring results in accordance with Part VI.D (retention of records). In addition to the parameters listed below, the permittee shall record the date and duration (in hours) of the storm event(s) sampled; rainfall measurements or estimates (in inches) of the storm event which generated the sampled runoff; the duration between the storm event sampled and the end of the previous measurable (greater than 0.1 inch rainfall) storm event; and an estimate of the total volume (in gallons) of the discharge sampled;

   a. *Section 313 of SARA Title III facilities.* In addition to any monitoring shown in Parts VI.A.2.b through j, facilities with storm water discharges associated with industrial activity that are subject to requirements to report releases into the environment under Section 313 of SARA Title III for chemicals which are classified as

'Section 313 water priority chemicals' are required to monitor the storm water that is discharged from the facility that comes into contact with any equipment; tank, container or other vessel or area used for storage of a Section 313 water priority chemical, or located at a truck or rail car loading or unloading area where a Section 313 water priority chemical is handled for: Oil and Grease (mg/L); Five Day Biochemical Oxygen Demand (BOD5) (mg/L); COD (mg/L); Total Suspended Solids (TSS) (mg/L); Total Kjeldahl Nitrogen (TKN) (mg/L); Total Phosphorus (mg/L); pH; and any Section 313 water priority chemical for which the facility is subject to reporting requirements under section 313 of the Emergency Planning and Community Right to Know Act of 1986.

b. *Primary metal industries.* Facilities with storm water discharges associated with industrial activity classified as Standard Industrial Classification (SIC) 33 (Primary Metal Industry) are required to monitor such storm water that is discharged from the facility for: Oil and Grease (mg/L); BOD5 (mg/L); Chemical Oxygen Demand (COD) (mg/L); TSS (mg/L); pH; Total Lead (mg/L); Total Cadmium (mg/L); Total Copper (mg/L); Total Arsenic (mg/L); Total Chromium (mg/L); and any pollutant limited in an effluent guideline to which the facility is subject.

c. *Land disposal units/incinerators/BIFs.* Facilities with storm water discharges associated with industrial activity from any active or inactive landfill, land application sites or open dump without a stabilized final cover that has received any industrial wastes (other than wastes from a construction site); and incinerators (including Boilers and Industrial Furnaces (BIFs)) that burn hazardous waste and operate under interim status or a permit under Subtitle C of RCRA, are required to monitor such storm water that is discharged from the facility for: Ammonia (mg/L), Magnesium (total) (mg/L), Magnesium (dissolved) (mg/L), Nitrate plus Nitrite Nitrogen (mg/L), COD (mg/L), Total Dissolved Solids (TDS) (mg/L), Total Organic Carbon (TOC) (mg/L), Oil and Grease (mg/L), pH, Total Arsenic (mg/L), Total Barium (mg/L), Total Cadmium (mg/L), Total Chromium (mg/L), Total Cyanide (mg/L), Total Lead (mg/L), Total Mercury (mg/L), Total Selenium (mg/L), and Total Silver (mg/L).

d. *Wood treatment.* Facilities with storm water discharges associated with industrial activity from areas that are used for wood treatment, wood surface application or

storage of treated or surface protected wood at any wood preserving or wood surface facilities are required to monitor such storm water that is discharged from the facility for: Oil and Grease (mg/L), pH, BOD5 (mg/L), COD (mg/L), and TSS (mg/L). In addition, facilities that use chlorophenolic formulations shall measure pentachlorophenol (mg/L); and facilities that use chromium-arsenic formulations shall measure Total Arsenic (mg/L), Total Chromium (mg/L), and Total Copper (mg/L).

e. *Coal pile runoff*. Facilities with storm water discharges associated with industrial activity from coal pile runoff are required to monitor such storm water that is discharged from the facility for: Oil and Grease (mg/L), pH, TSS (mg/L), Total Copper (mg/l), Total Nickel (mg/l) and Total Zinc (mg/l).

f. *Battery reclaimers*. Facilities with storm water discharges associated with industrial activity from areas used for storage of lead acid batteries, reclamation products, or waste products, and areas used for lead acid battery reclamation (including material handling activities) at facilities that reclaim lead acid batteries are required to monitor such storm water that is discharged from the facility for: Oil and Grease (mg/L); COD (mg/L); TSS (mg/L); pH; Total Copper (mg/l); and Total Lead (mg/l).

g. *Airports*. At airports with over 50,000 flight operations per year, facilities with storm water discharges associated with industrial activity from areas where aircraft or airport deicing operations occur (including runways, taxiways, ramps, and dedicated aircraft deicing stations) are required to monitor such storm water that is discharged from the facility when deicing activities are occurring for: Oil and Grease (mg/L); BOD5 (mg/L); COD (mg/L); TSS (mg/L); pH; and the primary ingredient used in the deicing materials used at the site (e.g. ethylene glycol, urea, etc.).

h. *Coal-fired steam electric facilities*. Facilities with storm water discharges associated with industrial activity from coal handling sites at coal fired steam electric power generating facilities (other than discharges in whole or in part from coal piles subject to storm water effluent guidelines at 40 CFR 423 - which are not eligible for coverage under this permit) are required to monitor such storm water that is discharged from the facility for: Oil and Grease

(mg/L), pH, TSS (mg/L), Total Copper (mg/l), Total Nickel (mg/l) and Total Zinc (mg/l).

i. *Animal handling / meat packing*. Facilities with storm water discharges associated with industrial activity from animal handling areas, manure management (or storage) areas, and production waste management (or storage) areas that are exposed to precipitation at meat packing plants, poultry packing plants, and facilities that manufacture animal and marine fats and oils, are required to monitor such storm water that is discharged from the facility for: BOD5 (mg/L); COD (mg/L); TSS (mg/L); TKN (mg/L); Total Phosphorus (mg/L); pH; and Fecal Coliform (counts per 100 ml).

j. *Additional facilities*. Facilities with storm water discharges associated with industrial activity that:

(i) come in contact with storage piles for solid chemicals used as raw materials that are exposed to precipitation at facilities classified as SIC 30 (Rubber and Miscellaneous Plastics Products) or SIC 28 (Chemicals and Allied Products);
(ii) are from those areas at automobile junkyards with any of the following: (A) over 250 auto/truck bodies with drivelines (engine, transmission, axles, and wheels), 250 drivelines, or any combination thereof (in whole or in parts) are exposed to storm water; (B) over 500 auto/truck units (bodies with or without drivelines in whole or in parts) are stored exposed to storm water; or (C) over 100 units per year are dismantled and drainage or storage of automotive fluids occurs in areas exposed to storm water;
(iii) come into contact with lime storage piles that are exposed to storm water at lime manufacturing facilities;
(iv) are from oil handling sites at oil fired steam electric power generating facilities;
(v) are from cement manufacturing facilities and cement kilns (other than discharges in whole or in part from material storage piles subject to storm water effluent guidelines at 40 CFR 411 - which are not eligible for coverage under this permit);
(vi) are from ready-mixed concrete facilities; or
(vii) are from ship building and repairing facilities;

are required to monitor such storm water discharged from the facility for: Oil and Grease (mg/L); COD (mg/L); TSS (mg/L); pH; and any pollutant limited in an effluent guideline to which the facility is subject.

3. Sample type. For discharges from holding ponds or other impoundments with a retention period greater than 24 hours, (estimated by dividing the volume of the detention pond by the estimated volume of water discharged during the 24 hours previous to the time that the sample is collected) a minimum of one grab sample may be taken. For all other discharges, data shall be reported for both a grab sample and a composite sample. All such samples shall be collected from the discharge resulting from a storm event that is greater than 0.1 inches in magnitude and that occurs at least 72 hours from the previously measurable (greater than 0.1 inch rainfall) storm event. The grab sample shall be taken during the first thirty minutes of the discharge. If the collection of a grab sample during the first thirty minutes is impracticable, a grab sample can be taken during the first hour of the discharge, and the discharger shall submit with the monitoring report a description of why a grab sample during the first thirty minutes was impracticable. The composite sample shall either be flow-weighted or time-weighted. Composite samples may be taken with a continuous sampler or as a combination of a minimum of three sample aliquot taken in each hour of discharge for the entire discharge or for the first three hours of the discharge, with each aliquot being separated by a minimum period of fifteen minutes. Grab samples only must be collected and analyzed for the determination of pH, cyanide, whole effluent toxicity, and oil and grease.

4. Representative discharge. When a facility has two or more outfalls that, based on a consideration of industrial activity, significant materials, and management practices and activities within the area drained by the outfall, the permittee reasonably believes discharge substantially identical effluent, the permittee may test the effluent of one of such outfalls and report that the quantitative data also applies to the substantially identical outfalls. In addition, for each outfall that the permittee believes is representative, an estimate of the size of the drainage area (in square feet) and an estimate of the runoff coefficient of the drainage area (e.g. low (under 40 percent), medium (40 to 65 percent) or high (above 65 percent)) shall be provided.

5. Sampling Waiver. When a discharger is unable to collect samples due to adverse climatic conditions, the discharger must record, in lieu of sampling data, a description of why samples could not be collected, including available documentation of the event. Adverse weather conditions which may prohibit the collection of samples includes weather conditions that create dangerous conditions for personnel (such as local flooding, high winds, hurricane,

tornadoes, electrical storms, etc.) or otherwise make the collection of a sample impracticable (drought, extended frozen conditions, etc.). Dischargers are precluded from exercising this waiver more than once during a two year period.

6. Alternative certification. A discharger is not subject to the monitoring requirements of Part VI.A.2 of this permit provided the discharger makes a certification for a given outfall, on an annual basis, under penalty of law, signed in accordance with Part VII.G (signatory requirements), that material handling equipment or activities, raw materials, intermediate products, final products, waste materials, by-products, industrial machinery or operations, significant materials from industrial activity, or in the case of airports, deicing activities, that are located in the areas of the facility that are within the drainage area of the outfall are not presently exposed to storm water and will not be exposed to storm water for the certification period. Such certification must be retained in the Storm Water Pollution Plan, and must be submitted to the EPD upon request by the Director.

B. Toxicity Testing. Permittees are not required to monitor for acute whole effluent toxicity unless notified to do so by the Director. Permittees that are required to monitor for acute whole effluent toxicity shall initiate the series of tests described below within the time period specified by the Director.

Test Procedures

a. The permittee shall conduct acute 24 hour static toxicity tests on both an appropriate invertebrate and an appropriate fish (vertebrate) test species (EPA/600/4-90-027 Rev. 9/91, Section 6.1.). Freshwater species must be used for discharges to freshwater waterbodies. Due to the non-saline nature of rainwater, freshwater test species should also be used for discharges to estuarine, marine or other naturally saline waterbodies.

b. All test organisms, procedures and quality assurance criteria used shall be in accordance with Methods for Measuring the Acute Toxicity of Effluent and Receiving Waters to Freshwater and Marine Organisms. EPA/600/4-90-027 (Rev. September 1991). U.S. EPA has proposed to establish regulations regarding these test methods in the Federal Register December 4, 1989, 53 FR 50216.

c. Tests shall be conducted on a grab sample of the discharge at 100 percent strength (no dilution) and a control consisting of synthetic dilution water. Results of all tests conducted with any species shall be reported according to EPA/600/4-90-027 (Rev. September 1991), Section 12, Report Preparation.

C. <u>Reporting</u>.

1. Except as provided in Part VI.C.2, permittees are not to submit monitoring results or a certification to the EPD, unless required in writing by the Director.

2. Facilities with at least one storm water discharge associated with industrial activity through a large or medium municipal separate storm sewer system (systems serving a population of 100,000 or more) must, upon the request of the municipality, submit signed copies of any monitoring reports, certifications and data to the operator of the municipal separate storm sewer system.

D. <u>Retention of Records</u>.

1. The permittee shall retain the Storm Water Pollution Prevention Plan developed in accordance with Part IV (Storm Water Pollution Prevention Plans) of this permit until at least one year after coverage under this permit terminates. The permittee shall retain all records of all monitoring information, copies of all reports required by this permit, and records of all data used to complete the Notice of Intent to be covered by this permit, until at least one year after coverage under this permit terminates. This period may be explicitly modified by alternative provisions of this permit (see paragraph VI.D.2 (below) of this permit) or extended by request of the Director at any time.

2. For discharges subject to sampling requirements pursuant to Part VI.A (monitoring requirements), in addition to the requirements of paragraph VI.D.1 (above), permittees are required to retain for a three year period from the date of sample collection or for the term of this permit, which ever is greater, records of all monitoring information collected during the term of this permit. Permittees must submit such monitoring results to the Director upon the request of the Director.

Part VII. STANDARD PERMIT CONDITIONS

A. Duty to Comply.

1. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Georgia Water Quality Control Act (O.C.G.A. §12-5-20) and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

2. Penalties for violations of permit conditions. The Federal Clean Water Act and the Georgia Water Quality Control Act provide that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required under this permit, makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction be punished by a fine or by imprisonment, or by both. The Federal Clean Water Act and the Georgia Water Quality Control Act also provide procedures for imposing civil penalties which may be levied for violations of the Act, any permit condition or limitation established pursuant to the Act, or negligently or intentionally failing of refusing to comply with any final or emergency order of the Director.

B. Continuation of the Expired General Permit.
This permit expires on May 31, 1998. However, an expired general permit continues in force and effect until a new general permit is issued. Permittees must submit a new NOI in accordance with the requirements of Part II of this permit, using a NOI form provided by the Director (or photocopy thereof) ninety (90) days prior to the expiration date of this permit to remain covered under the continued permit. Facilities that had not obtained coverage under the permit by May 31, 1998 cannot become authorized to discharge under the continued permit.

C. Need to Halt or Reduce Activity not a Defense. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

D. Duty to Mitigate. The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

E. Duty to Provide Information. The permittee shall furnish to the Director (or an authorized representative of the Director), within a time specified by the Director, any information which the Director may request to determine compliance with this permit. The permittee shall also furnish to the Director upon request copies of records required to be kept by this permit. When the facility discharges storm water associated with industrial activity through a municipal separate storm sewer system, the permittee shall also furnish to the municipal separate storm sewer system operator any information which is requested to determine compliance with this permit, the area wide NPDES permit, or other information. In the case of information submitted to the Director or a representative of the Director, such information shall be considered public information and available under the Georgia Open Records Act.

F. Other Information. When the permittee becomes aware that he failed to submit any relevant facts or submitted incorrect information in the Notice of Intent or in any other report to the Director, he shall promptly submit such facts or information.

G. Signatory Requirements. All Notices of Intent, Notices of Termination, storm water pollution prevention plans, reports, certifications or information either submitted to the Director (and/or the operator of a large or medium municipal separate storm sewer system), or that this permit requires be maintained by the permittee, shall be signed as follows:

1. All Notices of Intent shall be signed as follows:

   a. *For a corporation*: by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: (1) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or (2) the manager of one or more manufacturing, production or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25,000,000 (in second-quarter 1980 dollars) if

authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

b. *For a partnership or sole proprietorship*: by a general partner or the proprietor, respectively; or

c. *For a municipality, State, Federal, or other public agency*: by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes (1) the chief executive officer of the agency, or (2) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g. Regional Administrators of EPA).

2. All reports required by the permit and other information requested by the Director shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

a. The authorization is made in writing by a person described above and submitted to the Director.

b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of manager, operator, superintendent, or position of equivalent responsibility or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position).

c. *Changes to authorization*. If an authorization under paragraph VII.G.2 is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new notice of intent satisfying the requirements of paragraph II.C must be submitted to the Director prior to or together with any reports, information, or applications to be signed by an authorized representative.

d. *Certification*. Any person signing documents under this section shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or

supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

H. Oil and Hazardous Substance Liability. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under section 311 of the CWA or section 106 of CERCLA.

I. Property Rights. The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

J. Severability. The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

K. Requiring an Individual Permit or an Alternative General Permit.

The Director may require any person authorized by this permit to apply for and/or obtain either an individual NPDES permit or an alternative NPDES general permit.

L. State/Environmental Laws.

1. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by section 510 of the Clean Water Act.

2. No condition of this permit shall release the permittee from any responsibility or requirements under other environmental statutes or regulations.

M. <u>Proper Operation and Maintenance</u>. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit and with the requirements of storm water pollution prevention plans. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. Proper operation and maintenance requires the operation of backup or auxiliary facilities or similar systems, installed by a permittee only when necessary to achieve compliance with the conditions of the permit.

N. <u>Monitoring and Records</u>.

1. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

2. The permittee shall retain records of all monitoring information including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of the reports required by this permit, and records of all data used to complete the application for this permit, for a period as specified in Part VI.D of this permit. This period may be extended by request of the Director at any time.

3. <u>Records Contents</u>. Records of monitoring information shall include:

   a. The date, exact place, and time of sampling or measurements;

   b. The initials or name(s) of the individual(s) who performed the sampling or measurements;

   c. The date(s) analyses were performed;

   d. The time(s) analyses were initiated;

   e. The initials or name(s) of the individual(s) who performed the analyses;

   f. References and written procedures, when available, for the analytical techniques or methods used; and

   g. The results of such analyses, including the bench sheets, instrument readouts, computer disks or tapes, etc., used to determine these results.

4. Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.

O. Inspection and Entry. The permittee shall allow the Director or an authorized representative of EPA, the State, or, in the case of a facility which discharges through a municipal separate storm sewer, an authorized representative of the municipal operator or the separate storm sewer receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;

2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit; and

3. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment).

P. Permit Actions. This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

Part VIII. TERMINATION OF COVERAGE

A. Notice of Termination. Where all storm water discharges associated with industrial activity that are authorized by this permit are eliminated, the operator of the facility may submit a Notice of Termination that is signed in accordance with Part VII.G (signatory requirements) of this permit. The Notice of Termination shall include the following information:

1. Name, mailing address, county, and location of the facility for which the notification is submitted. Where a mailing address for the site is not available, the facility location can be described in narrative terms;

2. Up to four 4-digit SIC codes that best represent the principal products or for hazardous waste treatment, storage or disposal facilities, land disposal facilities that

receive or have received any industrial waste, steam electric power generating facilities, or treatment works treating domestic sewage, an indication of those activities provided by the facility;

3. The operator's name, address, telephone number, ownership status and status as Federal, State, private, public or other entity;

4. The NPDES permit for the storm water discharge associated with industrial activity identified by the Notice of Termination; and

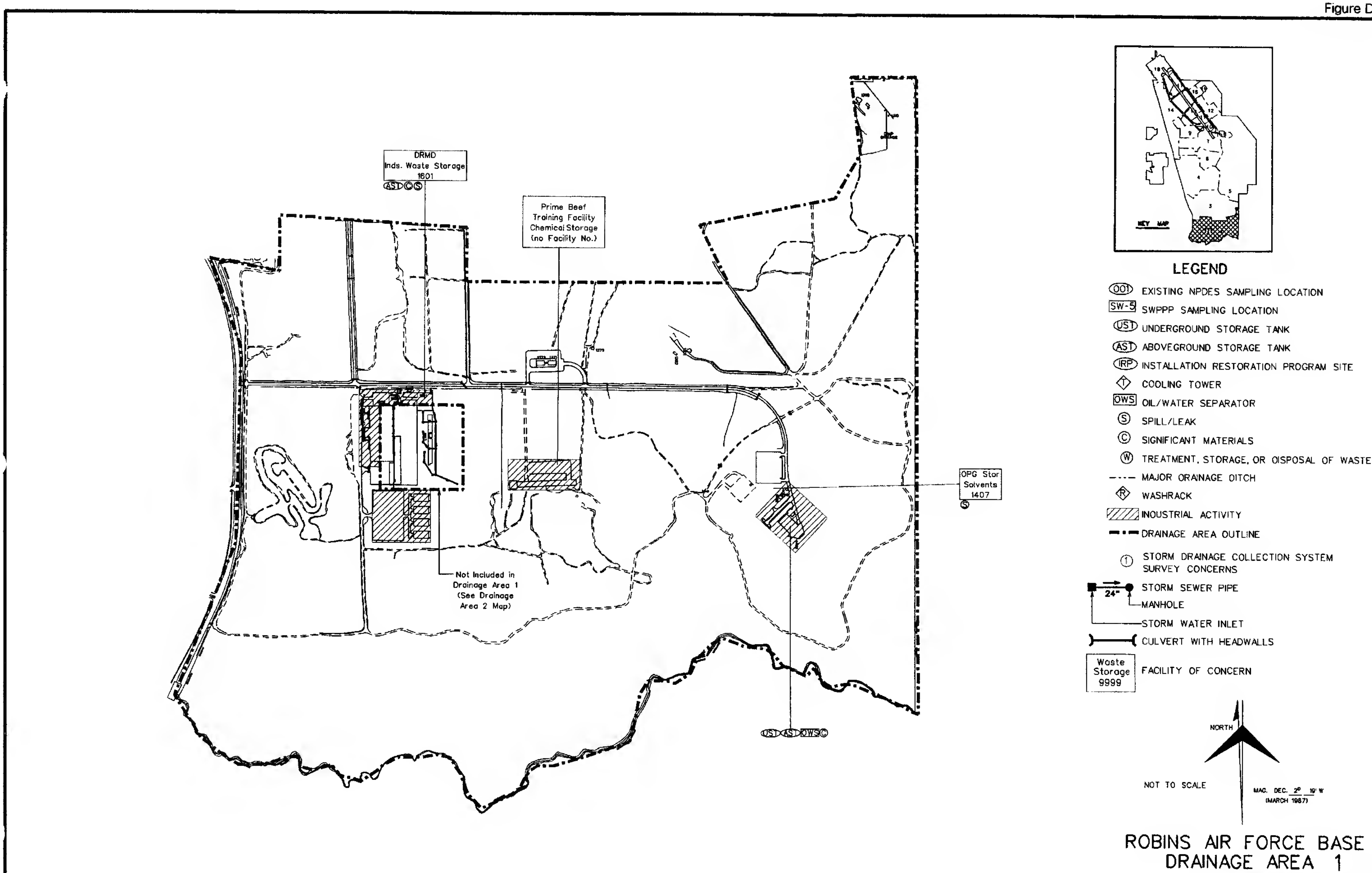
5. The following certification signed in accordance with Part VII.G (signatory requirements) of this permit:

 "I certify under penalty of law that all storm water discharges associated with industrial activity from the identified facility that are authorized by a NPDES general permit have been eliminated. I understand that by submitting this notice of termination, that I am no longer authorized to discharge storm water associated with industrial activity under this general permit, and that discharging pollutants in storm water associated with industrial activity to waters of the United States is unlawful under the Clean Water Act where the discharge is not authorized by a NPDES permit."

B. <u>Addresses</u>. All Notices of Termination are to be sent, using the form provided by the Director (or a photocopy thereof), to the Director of the NPDES program in care of the address shown in Part II.C.

APPENDIX D
DRAINAGE AREA MAPS

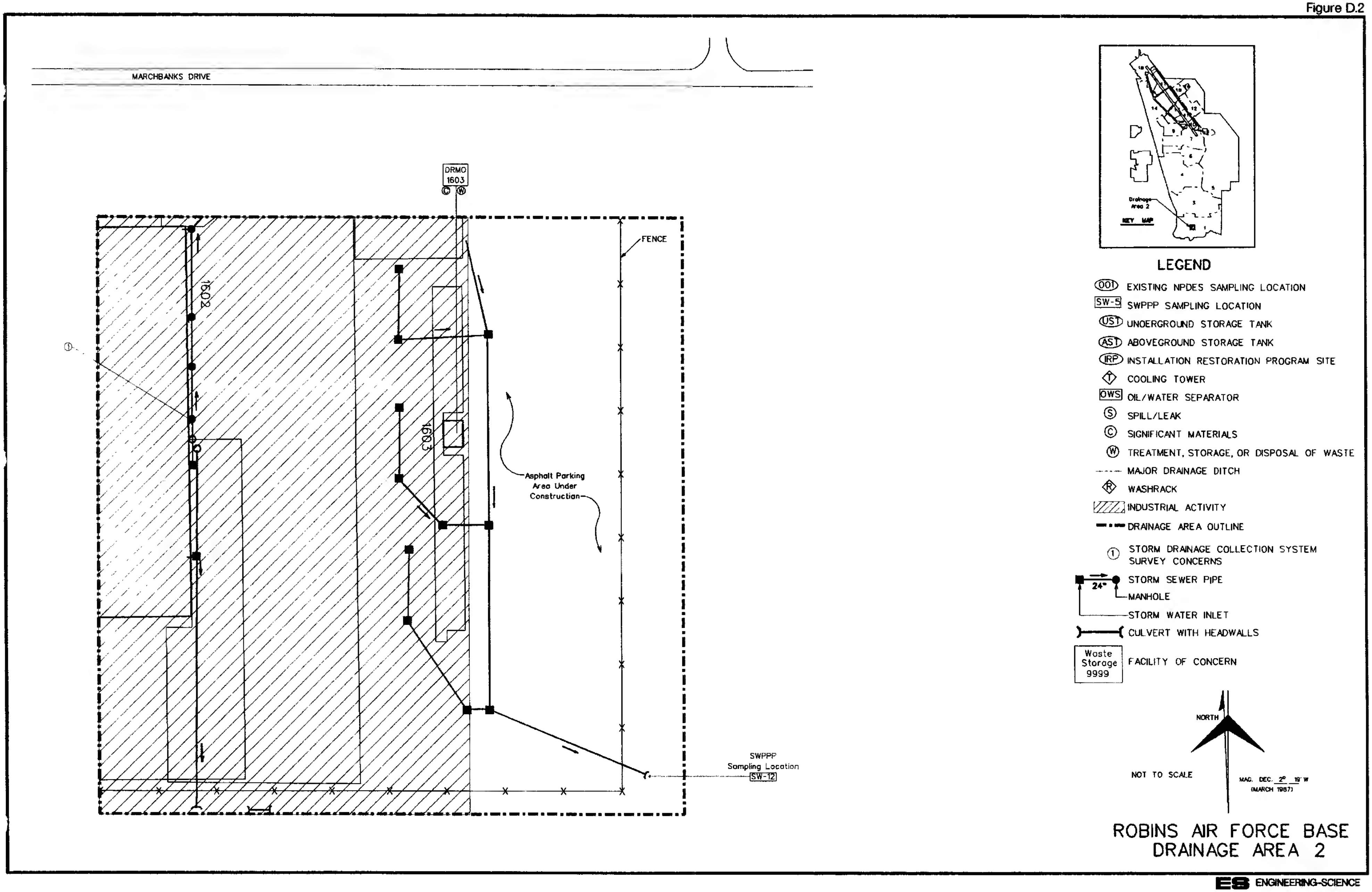
Figure D.1



ROBINS AIR FORCE BASE
DRAINAGE AREA 1

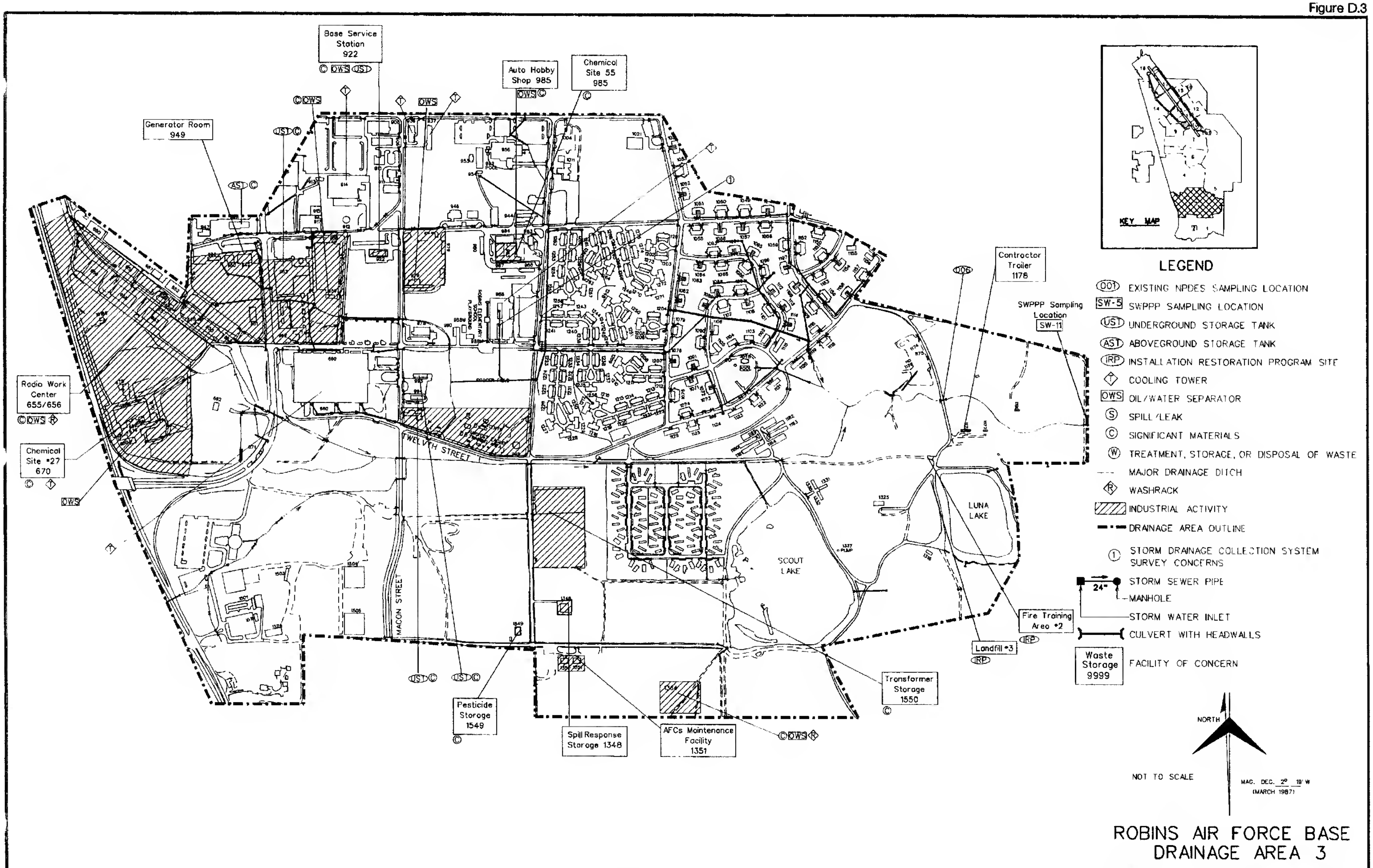
ES ENGINEERING-SCIENCE

Figure D.2



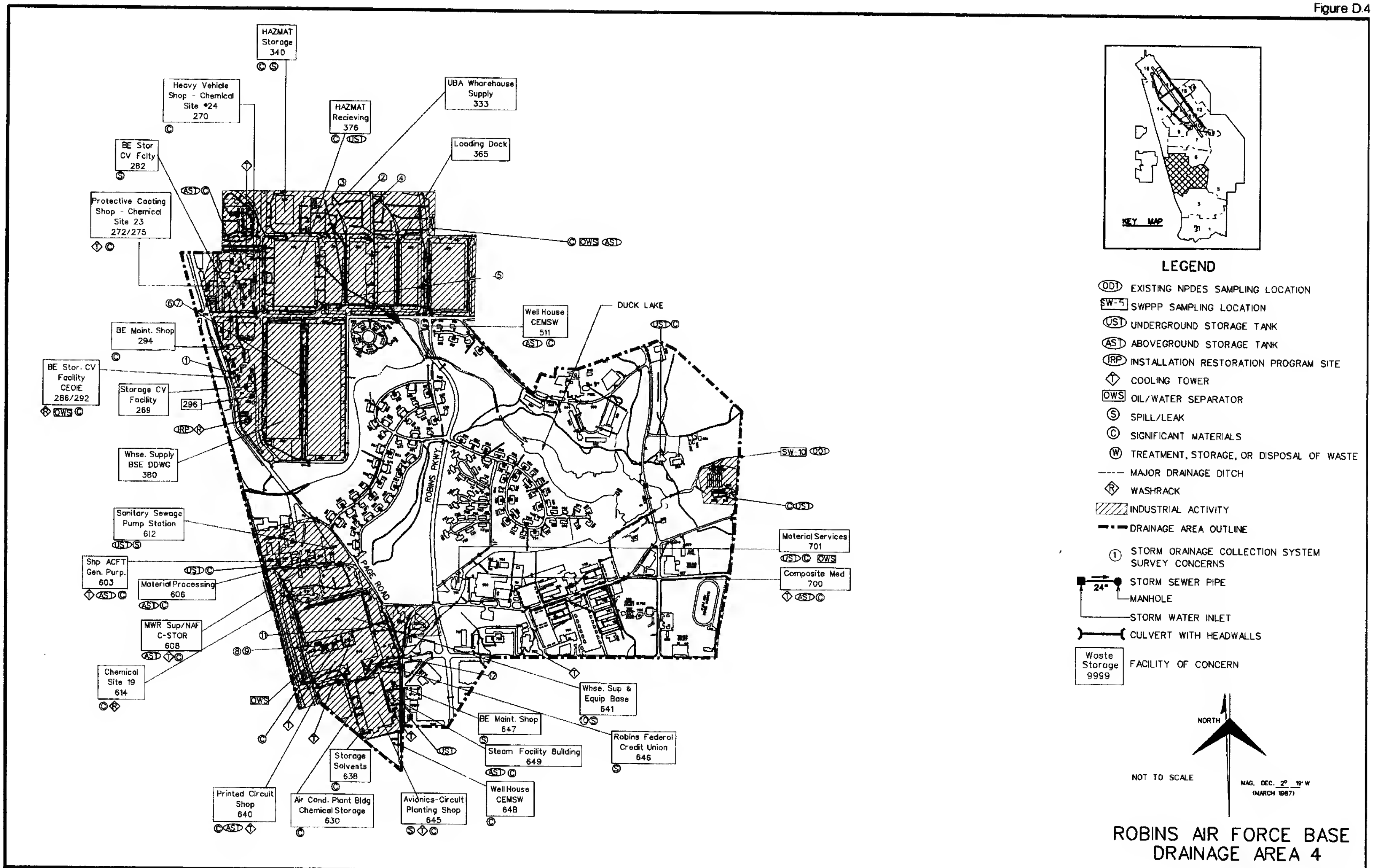
MARCHBANKS DRIVE
DRMO 1603
FENCE
1602
1603
Asphalt Parking Area Under Construction
SWPPP Sampling Location SW-12
KEY MAP
Drainage Area 2
LEGEND
001 EXISTING NPDES SAMPLING LOCATION
SW-5 SWPPP SAMPLING LOCATION
UST UNDERGROUND STORAGE TANK
AST ABOVEGROUND STORAGE TANK
IRP INSTALLATION RESTORATION PROGRAM SITE
COOLING TOWER
OWS OIL/WATER SEPARATOR
S SPILL/LEAK
C SIGNIFICANT MATERIALS
W TREATMENT, STORAGE, OR DISPOSAL OF WASTE
MAJOR DRAINAGE DITCH
WASHRACK
INDUSTRIAL ACTIVITY
DRAINAGE AREA OUTLINE
1 STORM DRAINAGE COLLECTION SYSTEM SURVEY CONCERNS
24" STORM SEWER PIPE
MANHOLE
STORM WATER INLET
CULVERT WITH HEADWALLS
Waste Storage 9999 FACILITY OF CONCERN
NORTH
NOT TO SCALE
MAG. DEC. 2° 19' W (MARCH 1987)
ROBINS AIR FORCE BASE
DRAINAGE AREA 2
ES ENGINEERING-SCIENCE

Figure D.3



ROBINS AIR FORCE BASE
DRAINAGE AREA 3

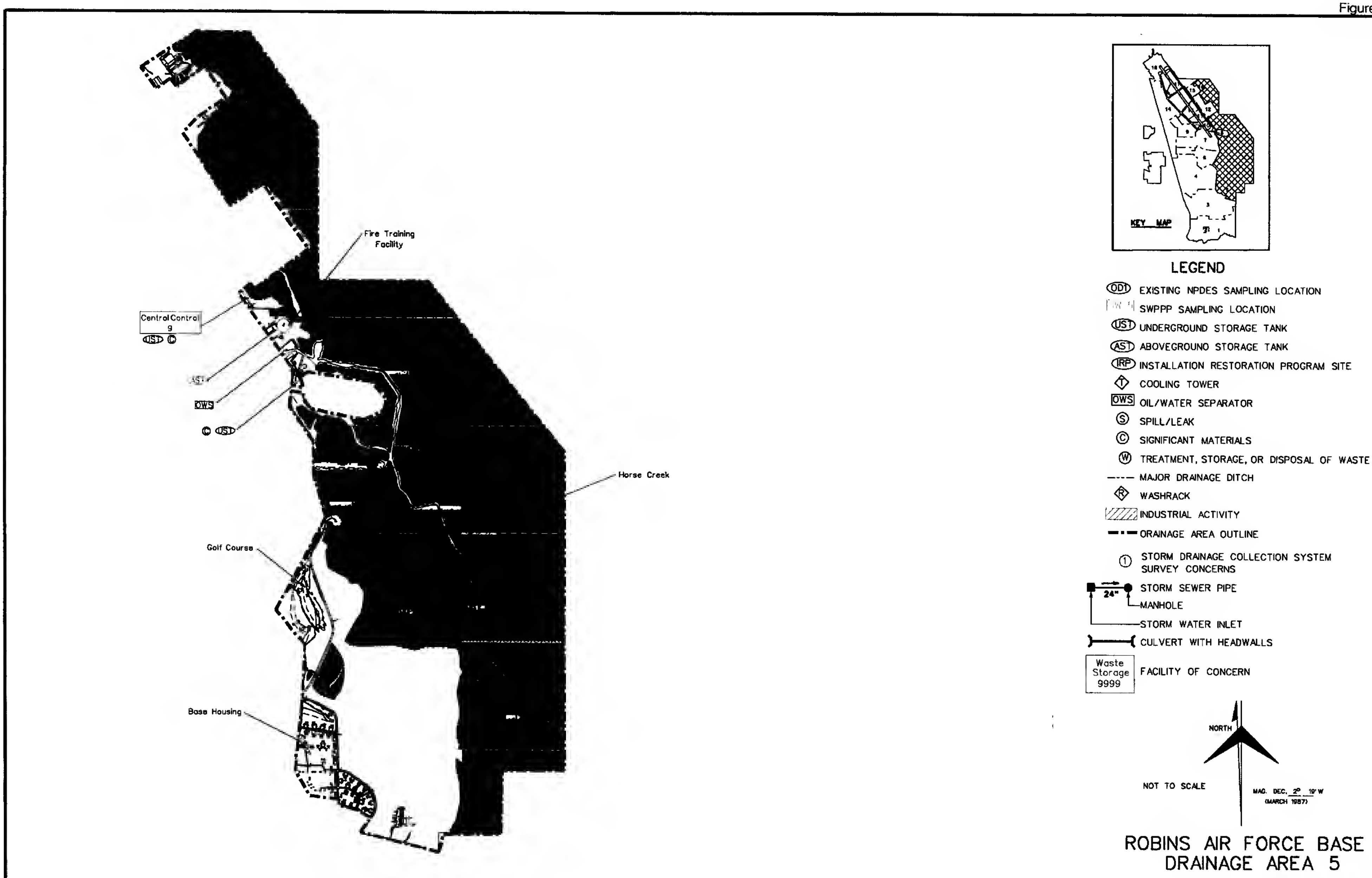
ENGINEERING-SCIENCE



ROBINS AIR FORCE BASE
DRAINAGE AREA 4

ES ENGINEERING-SCIENCE

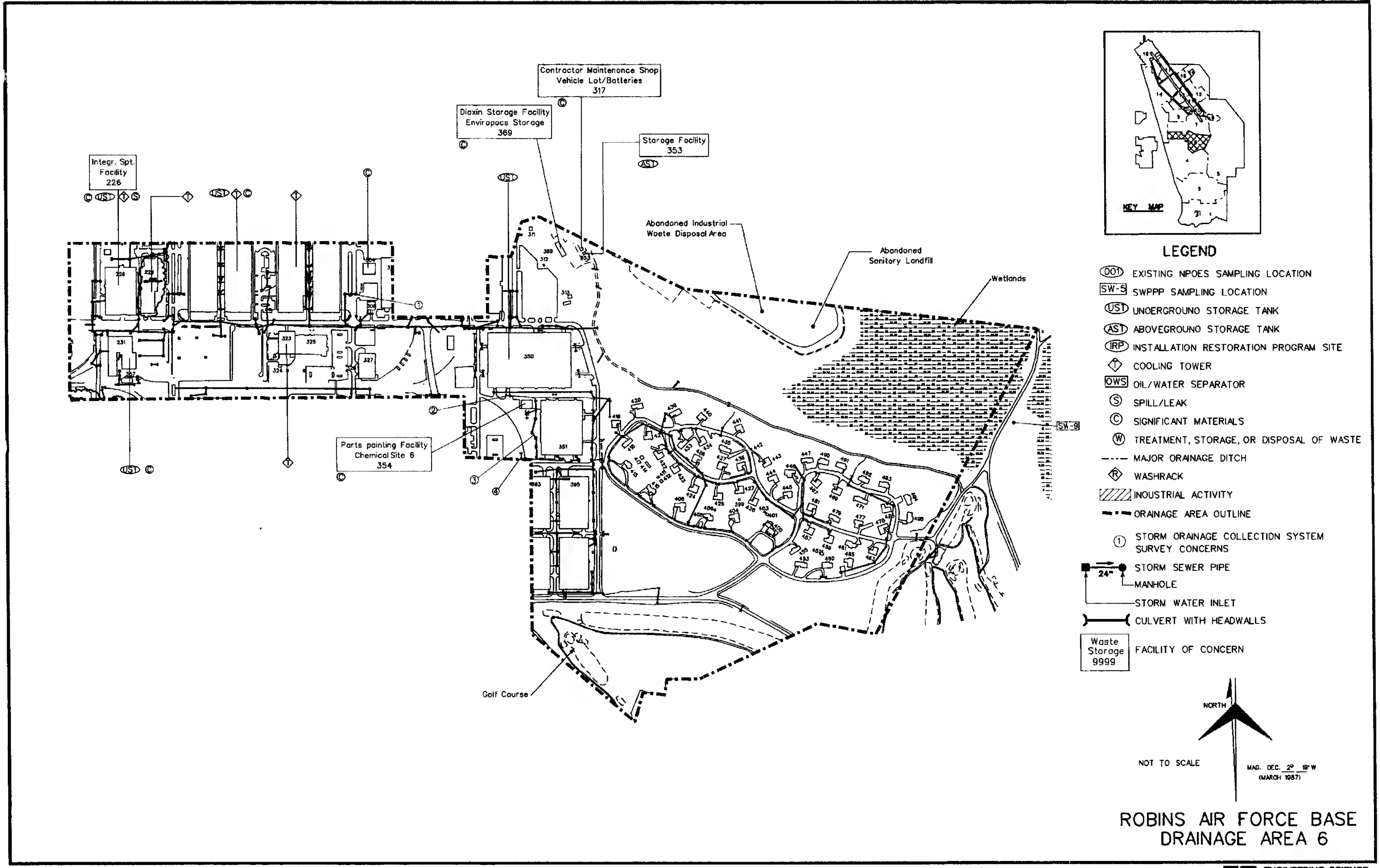
Figure D.5



ROBINS AIR FORCE BASE
DRAINAGE AREA 5

ES ENGINEERING-SCIENCE

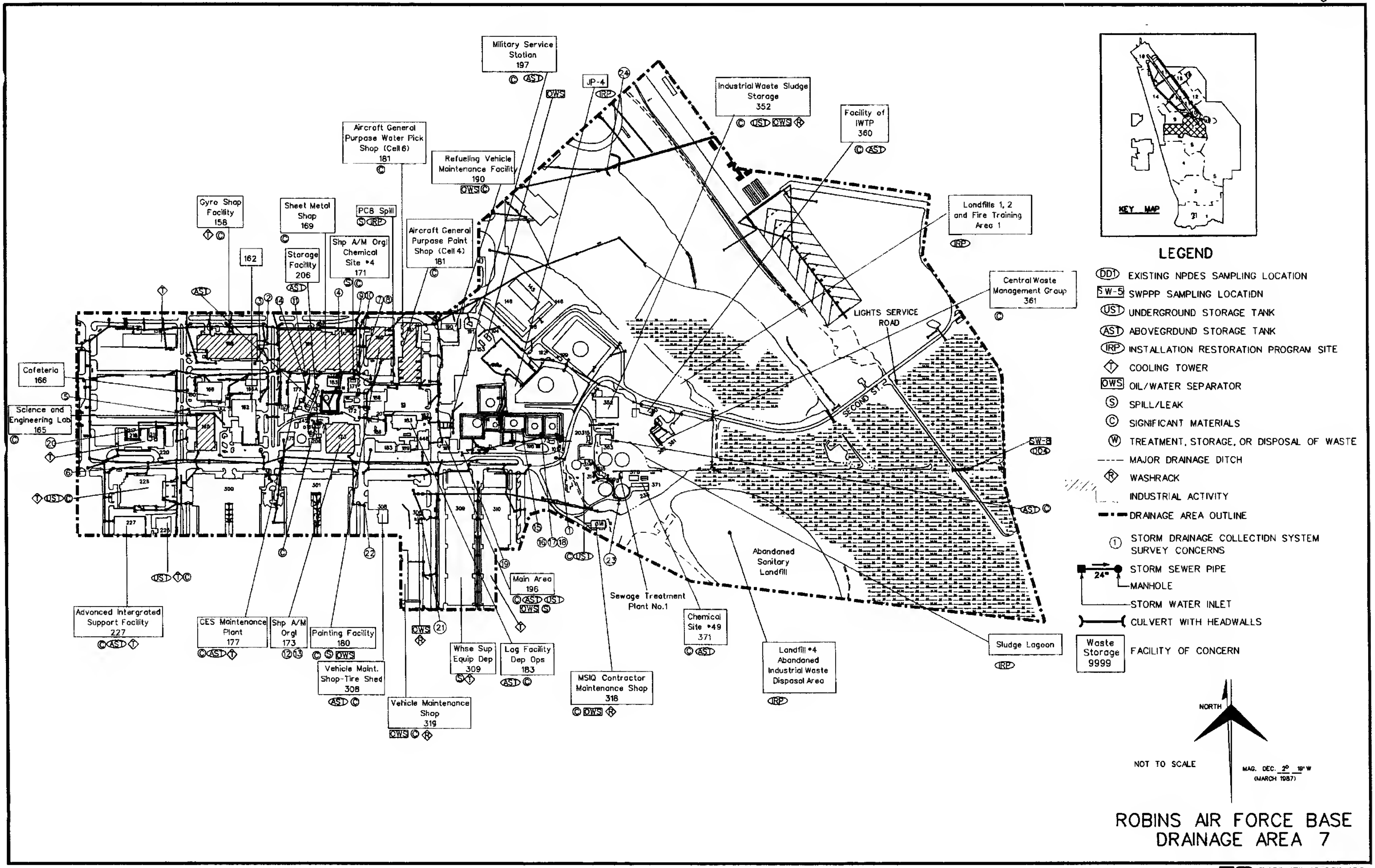
Figure D.6



ROBINS AIR FORCE BASE
DRAINAGE AREA 6

ES ENGINEERING-SCIENCE

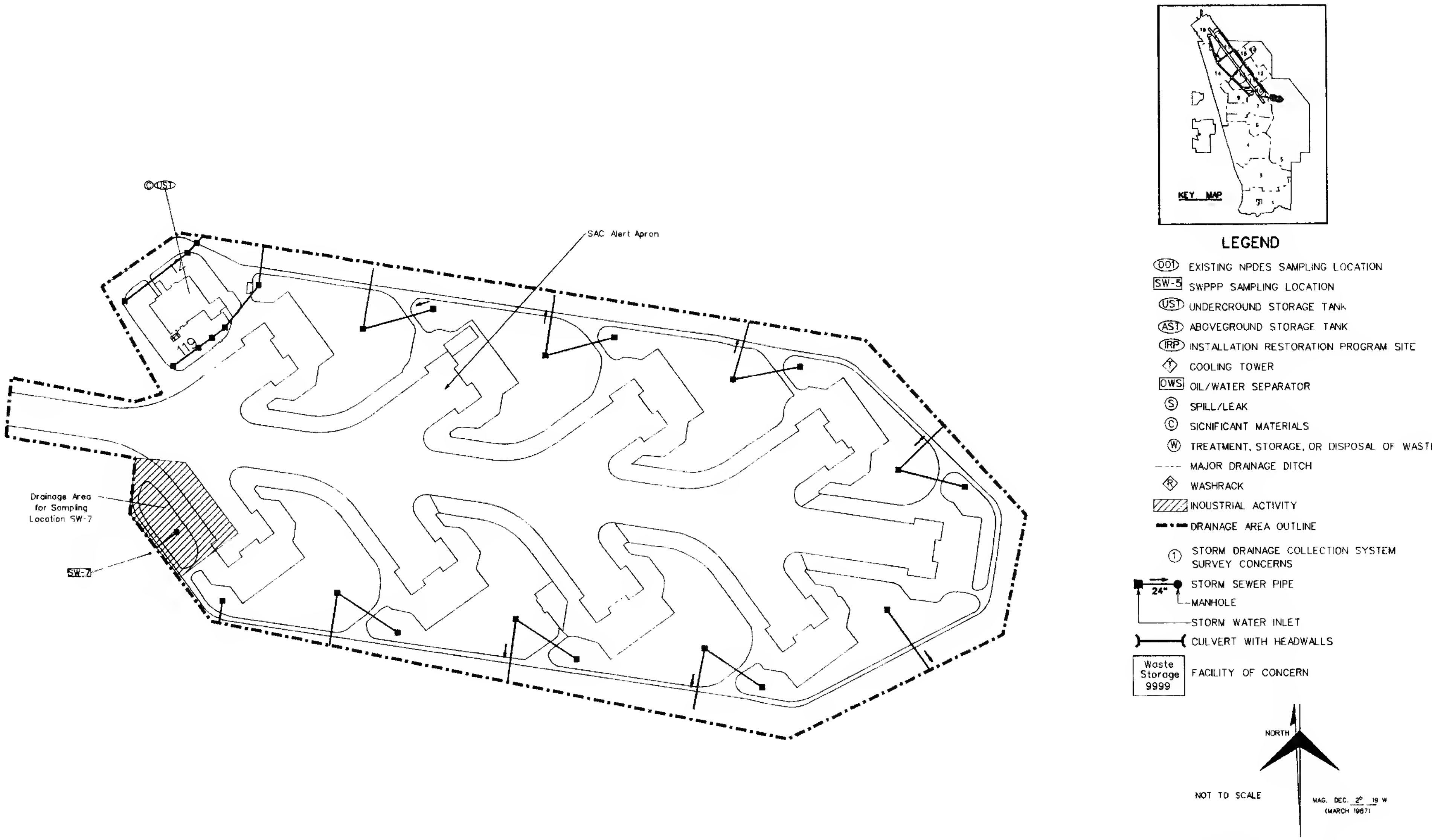
Figure D.7



ROBINS AIR FORCE BASE
DRAINAGE AREA 7

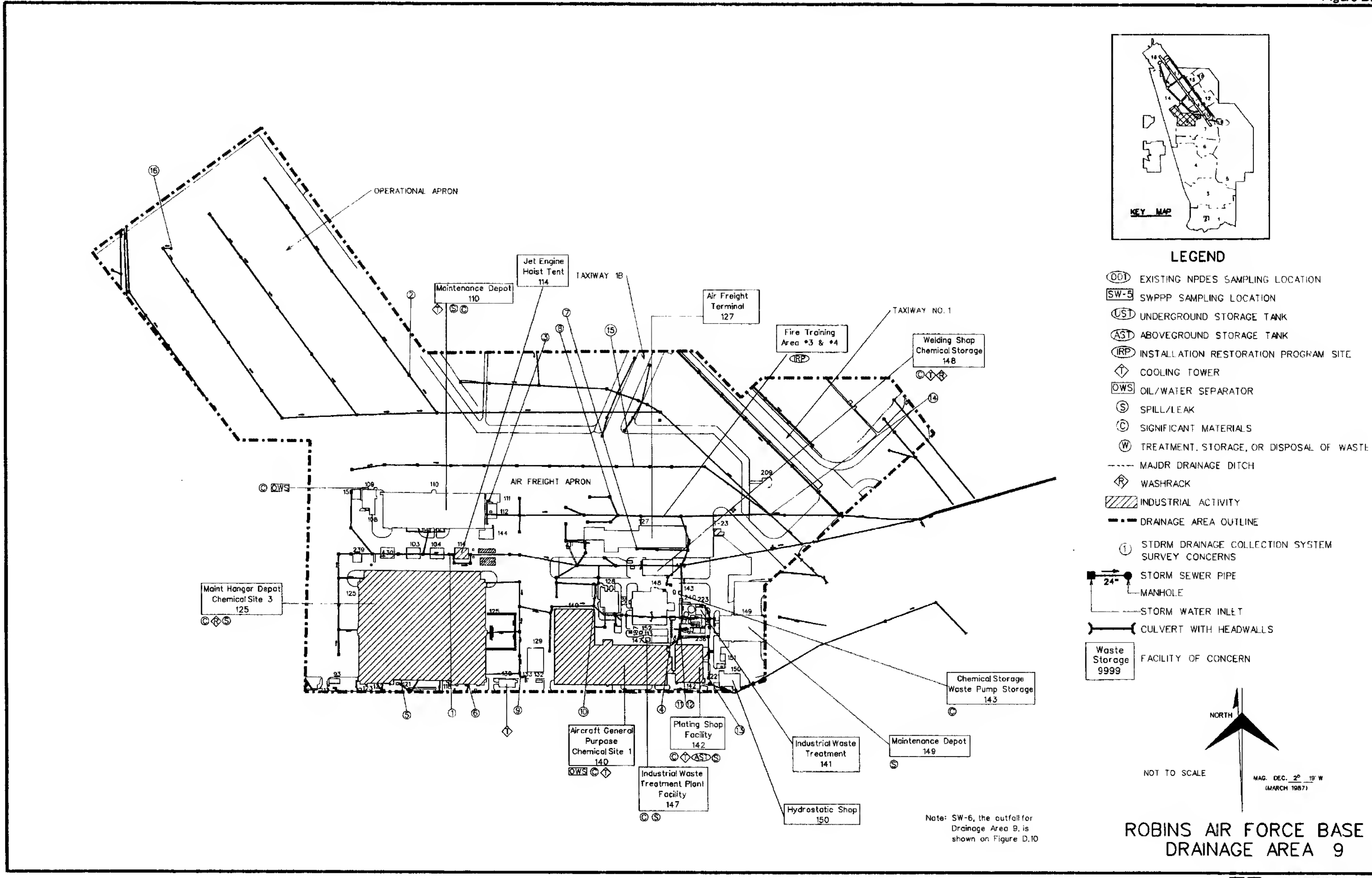
ES ENGINEERING-SCIENCE

Figure D.8



ROBINS AIR FORCE BASE
DRAINAGE AREA 8

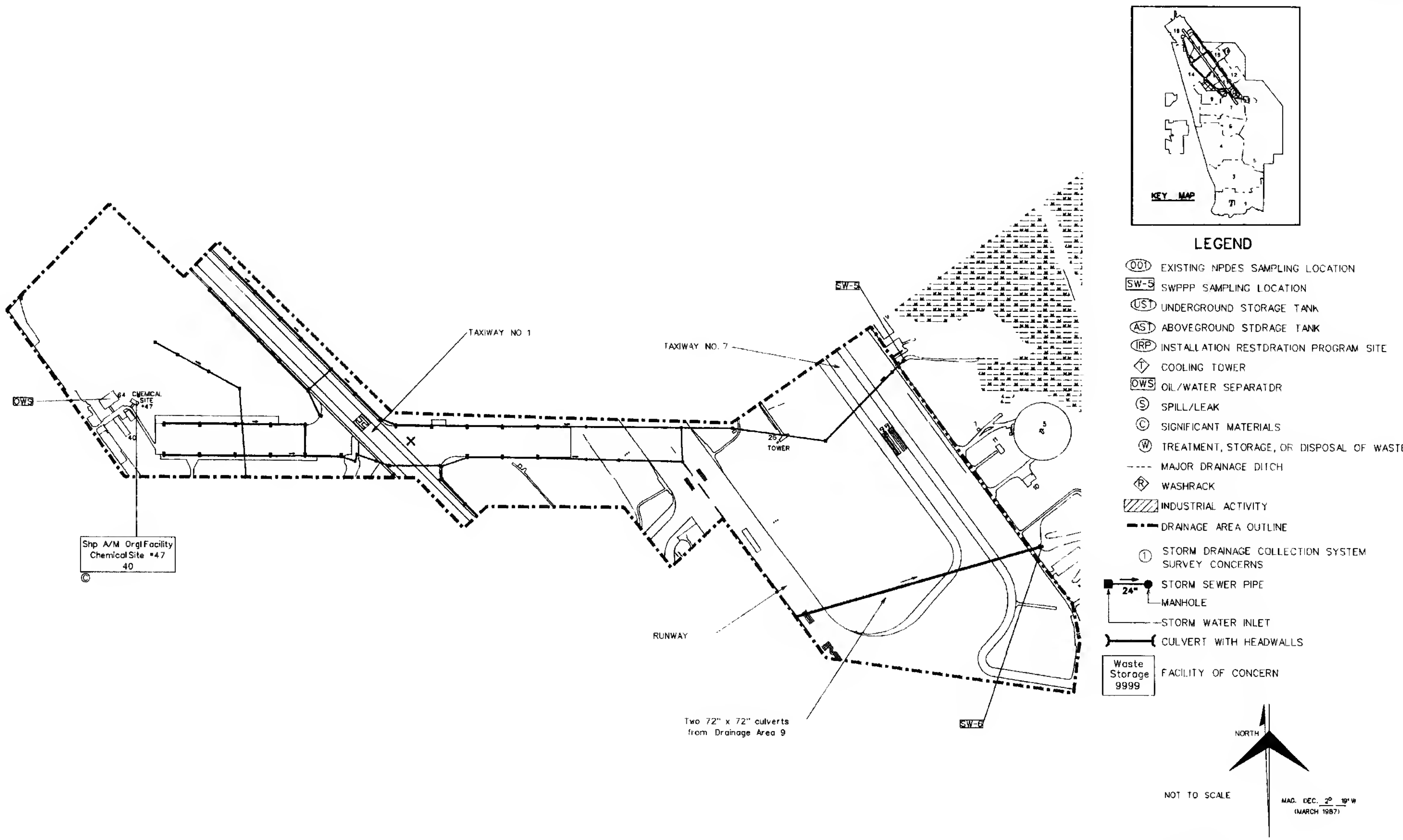
ES ENGINEERING-SCIENCE



ROBINS AIR FORCE BASE
DRAINAGE AREA 9

ENGINEERING-SCIENCE

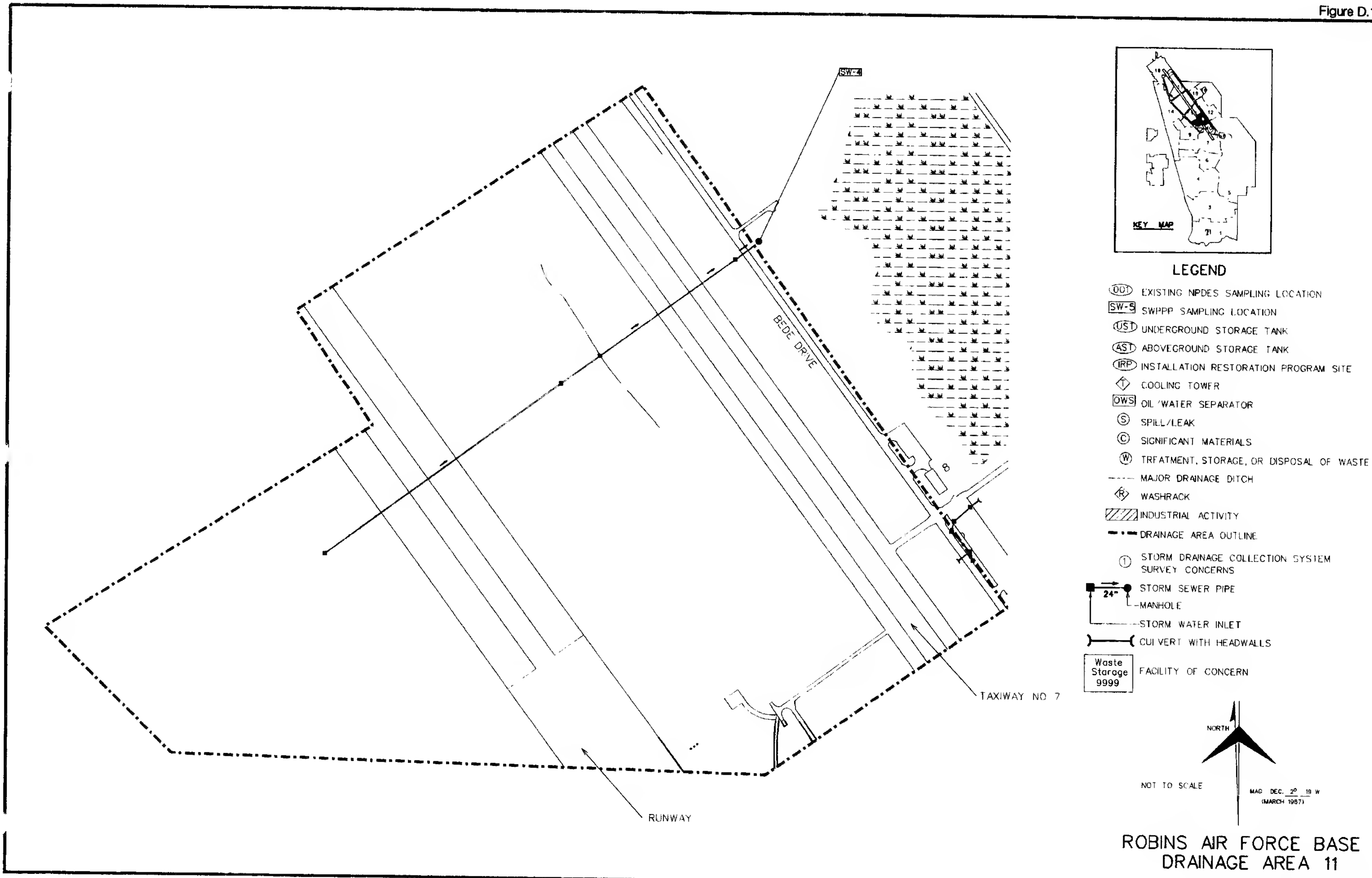
Figure D.10



ROBINS AIR FORCE BASE
DRAINAGE AREA 10

ENGINEERING-SCIENCE

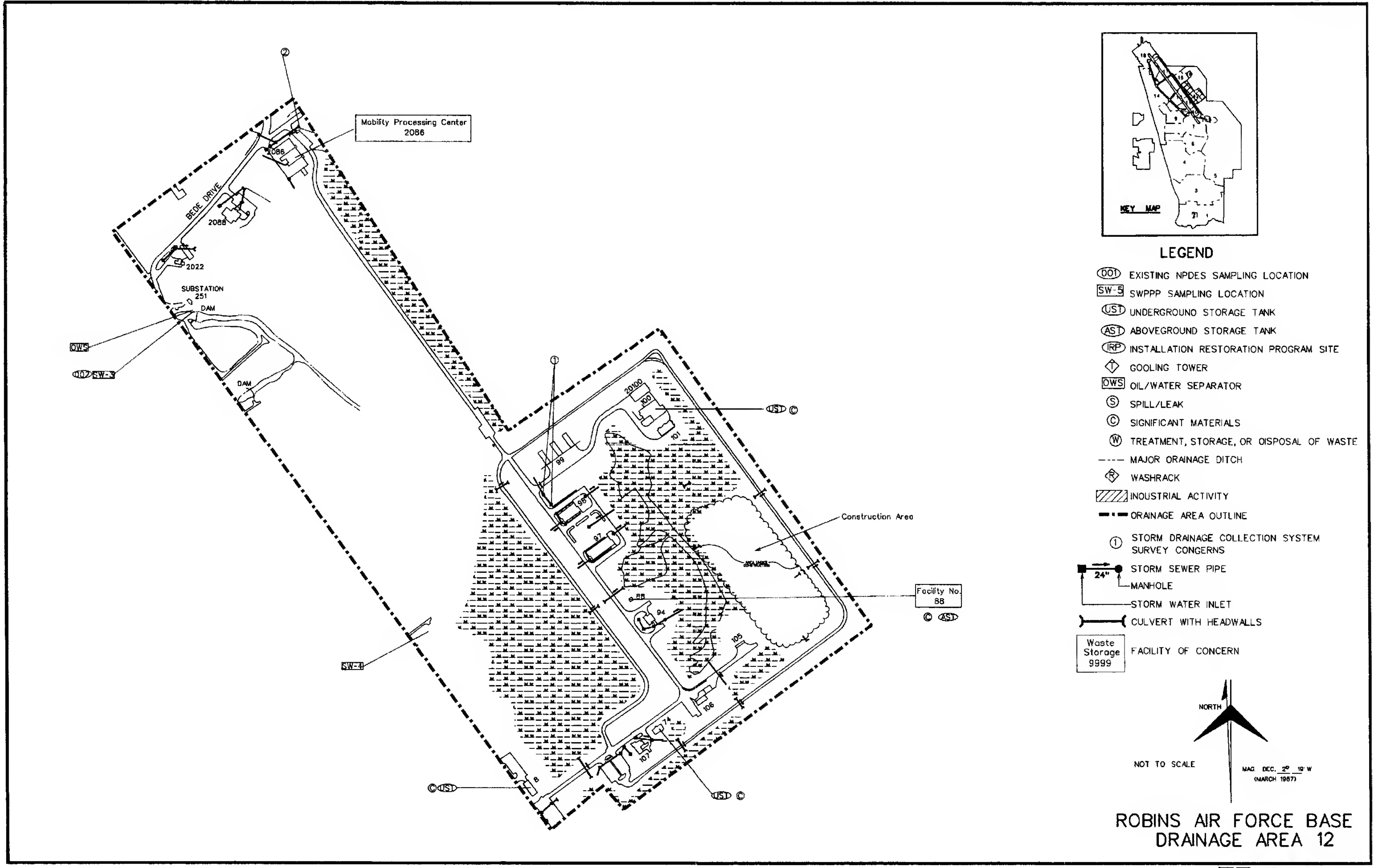
Figure D.11



ROBINS AIR FORCE BASE
DRAINAGE AREA 11

ENGINEERING-SCIENCE

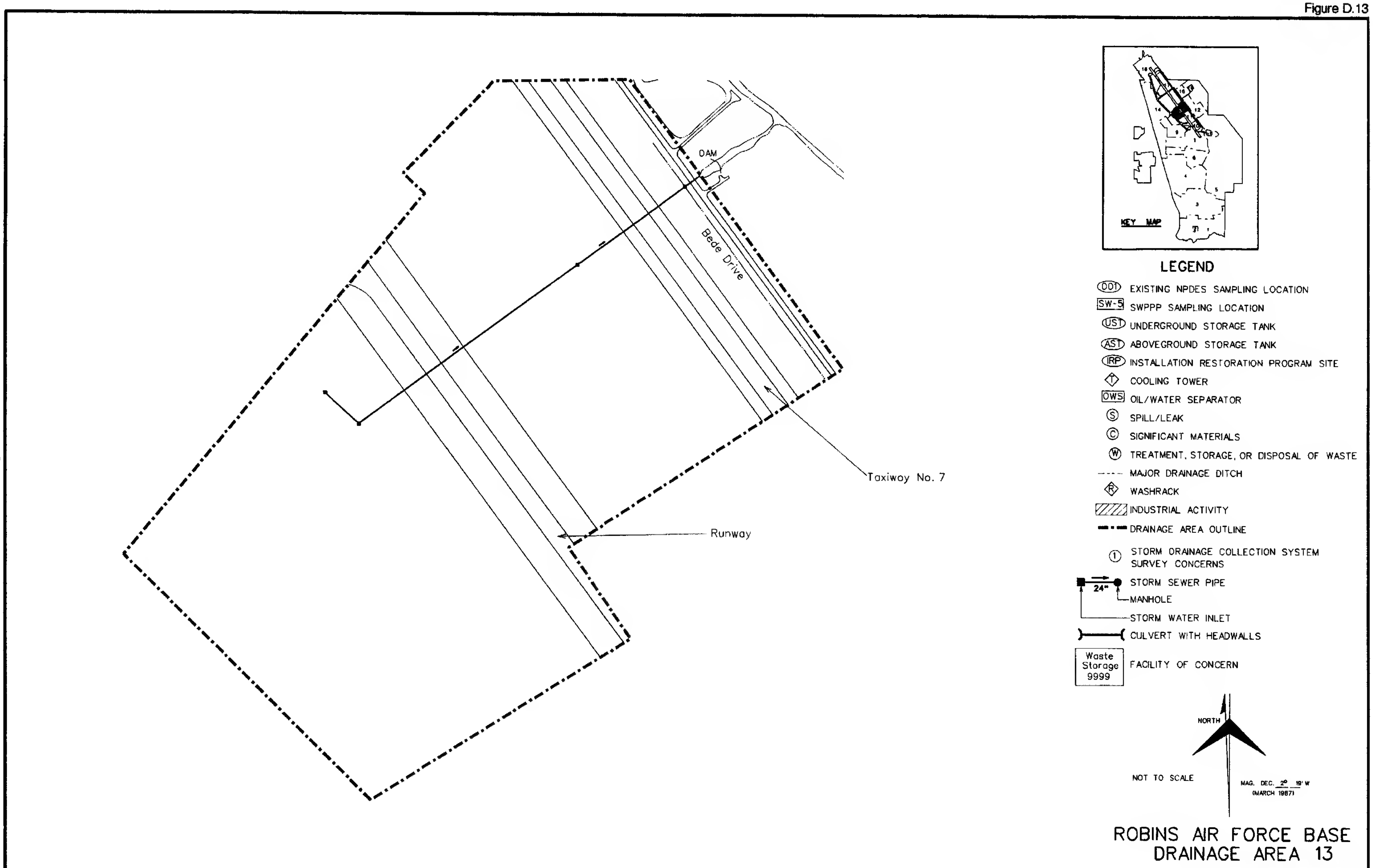
Figure D.12



ROBINS AIR FORCE BASE
DRAINAGE AREA 12

ES ENGINEERING-SCIENCE

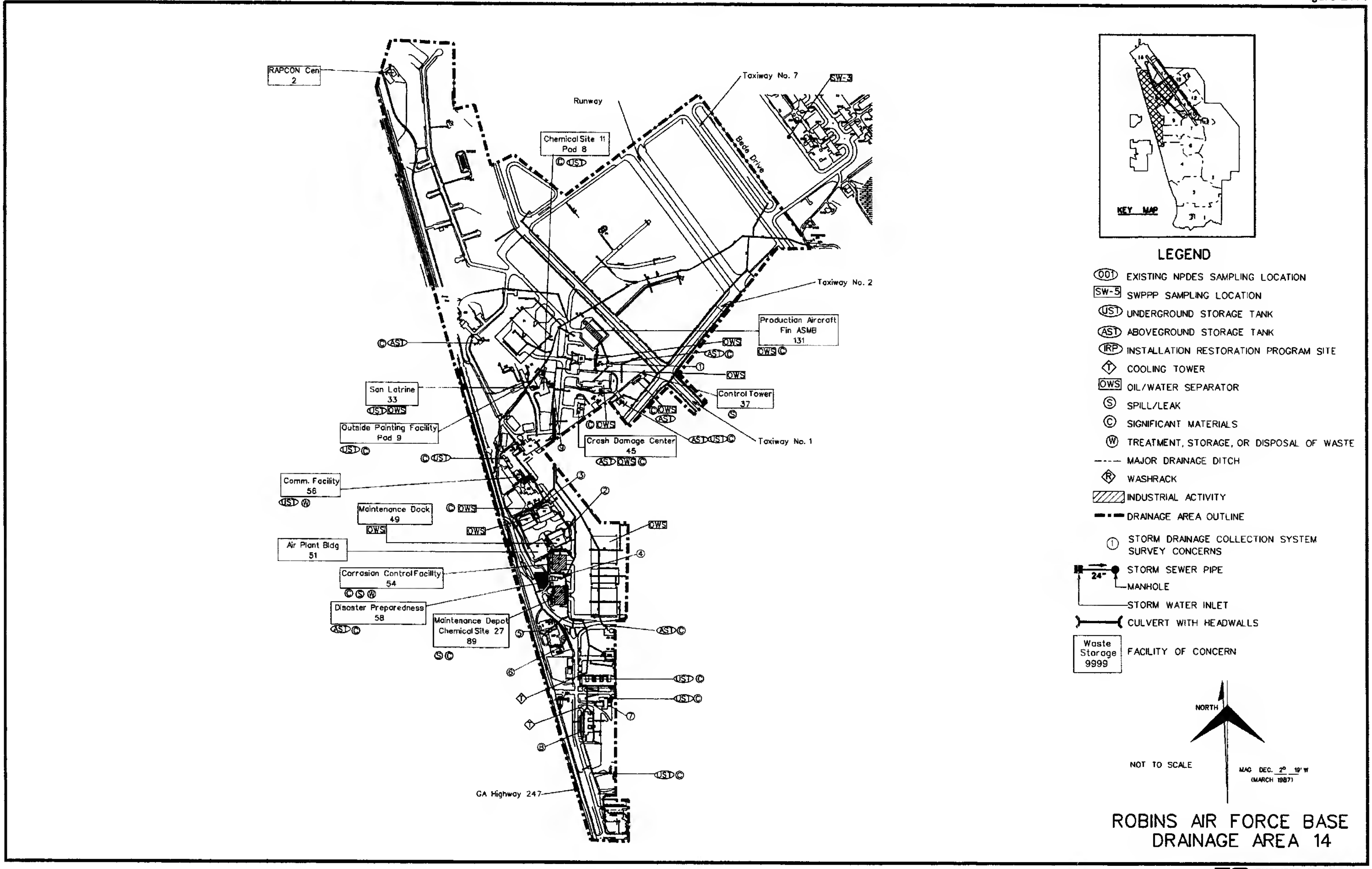
Figure D.13



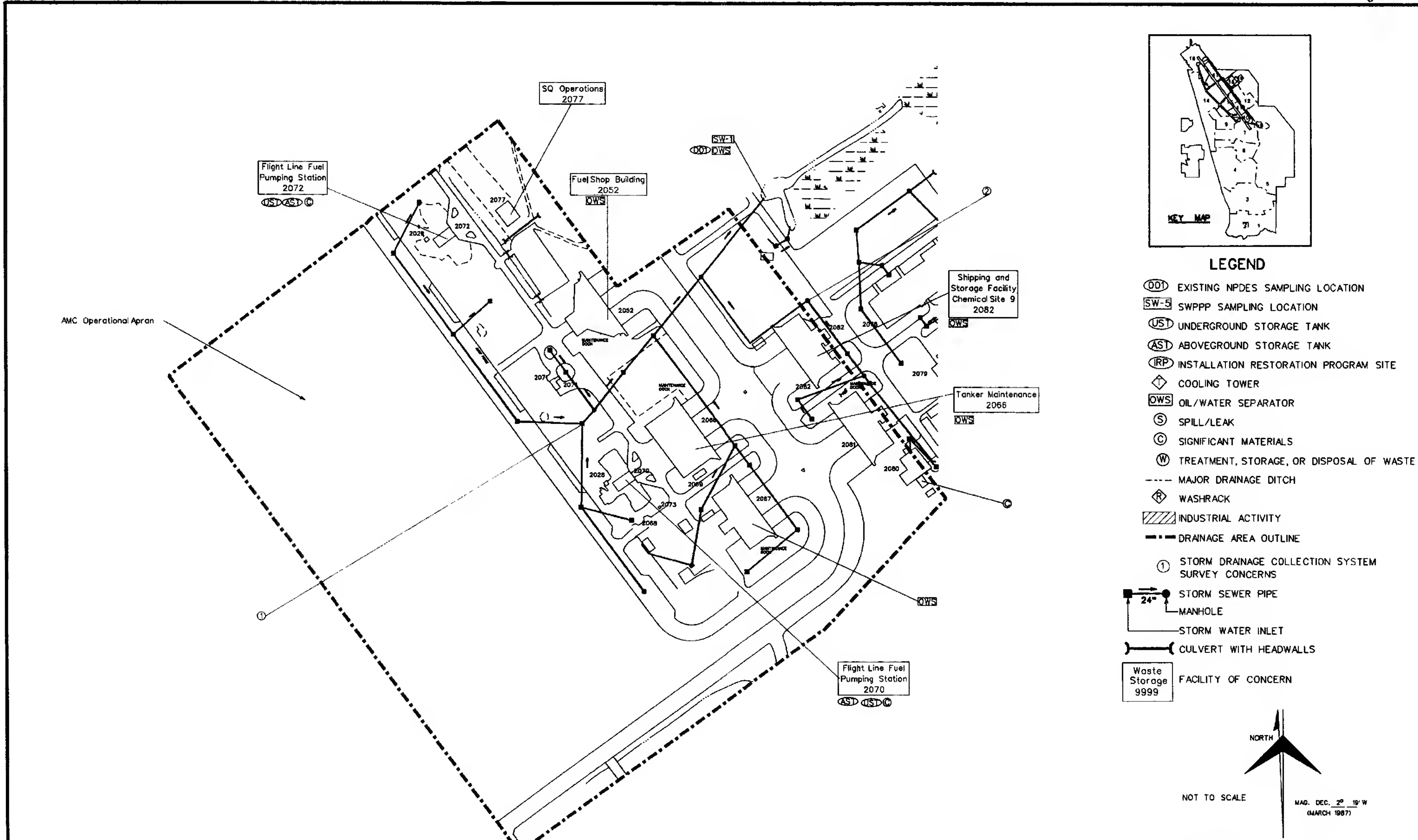
ROBINS AIR FORCE BASE
DRAINAGE AREA 13

ENGINEERING-SCIENCE

Figure D.14



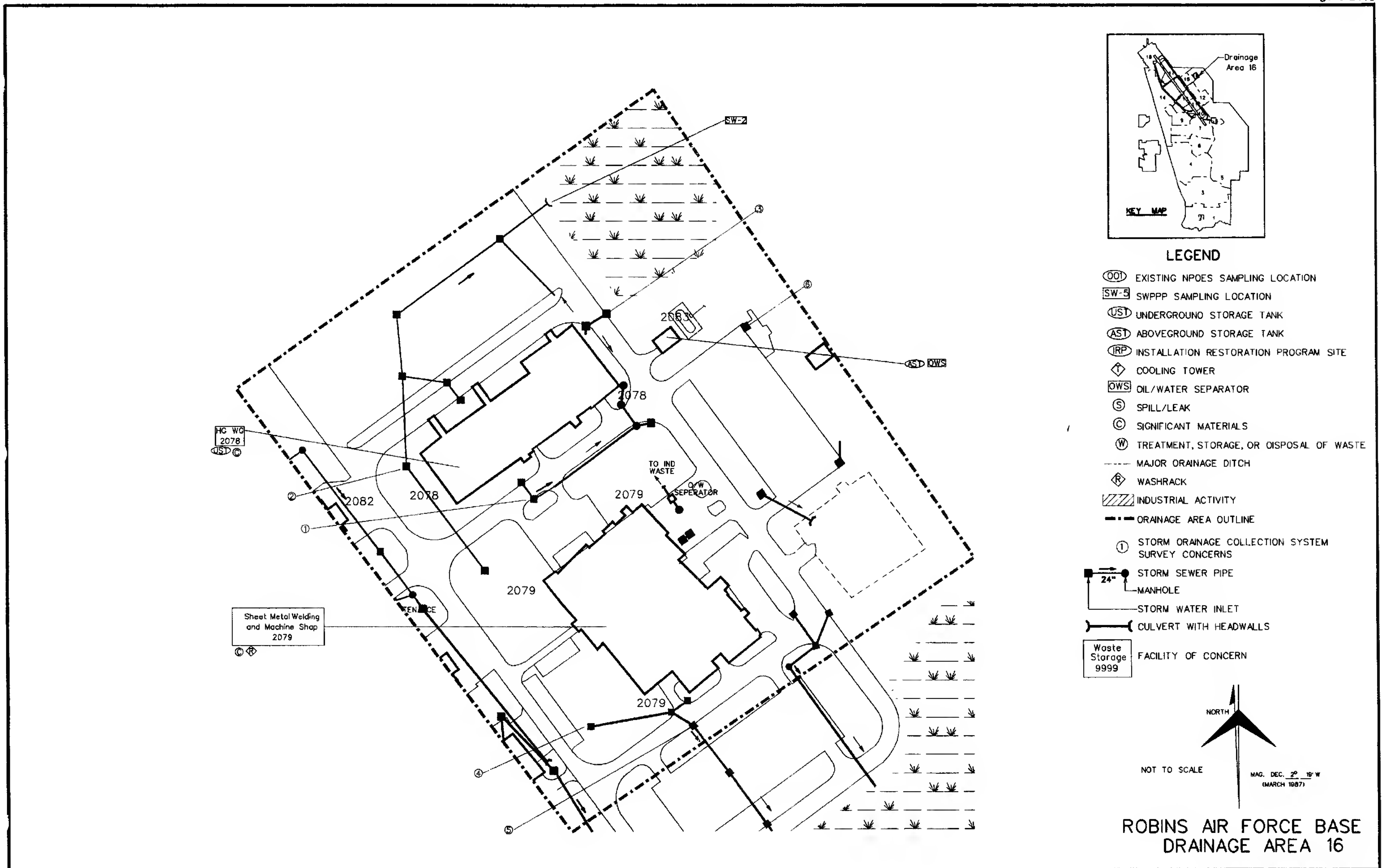
ES ENGINEERING-SCIENCE



ROBINS AIR FORCE BASE
DRAINAGE AREA 15

ENGINEERING-SCIENCE

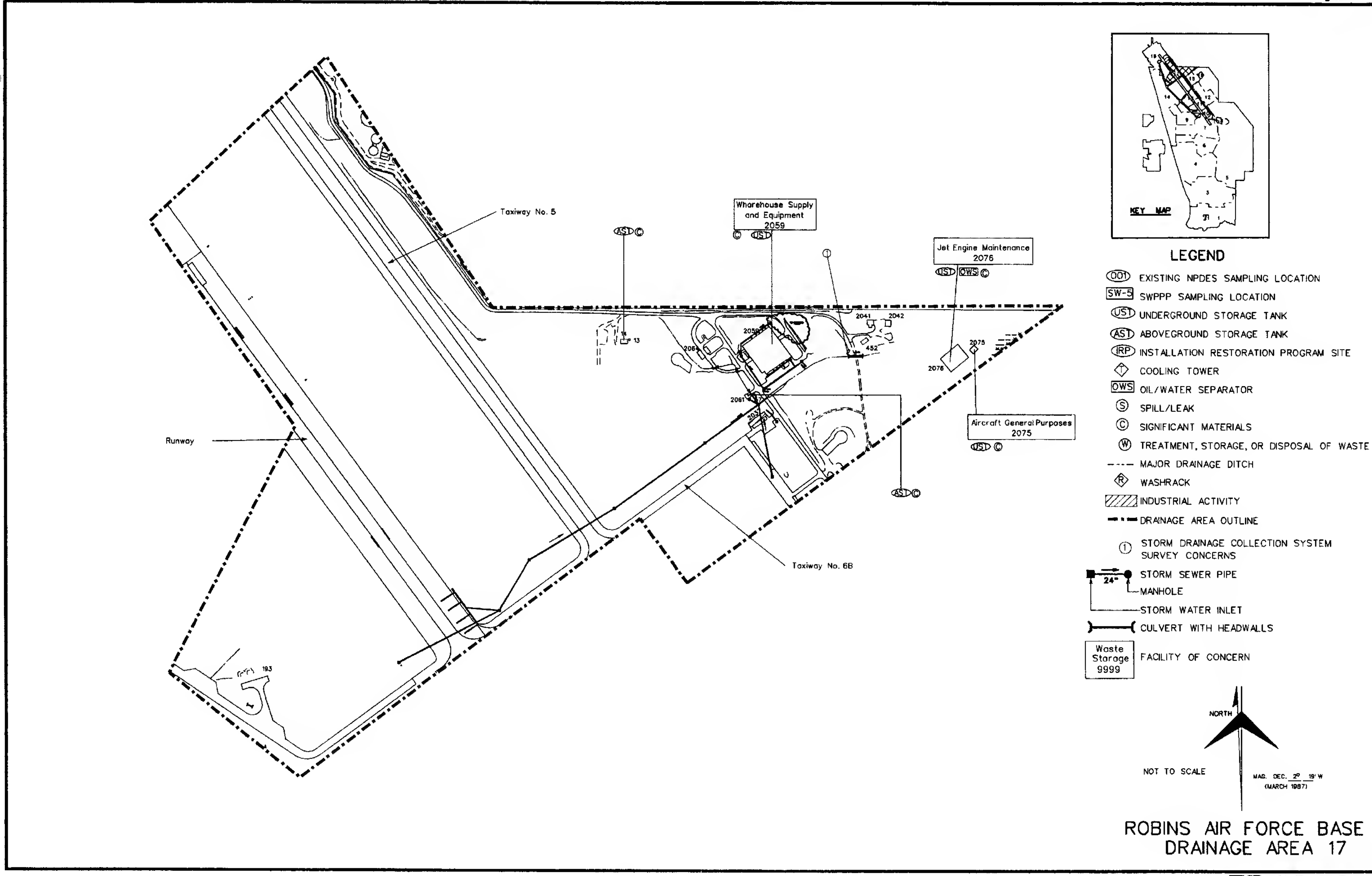
Figure D.16



ROBINS AIR FORCE BASE
DRAINAGE AREA 16

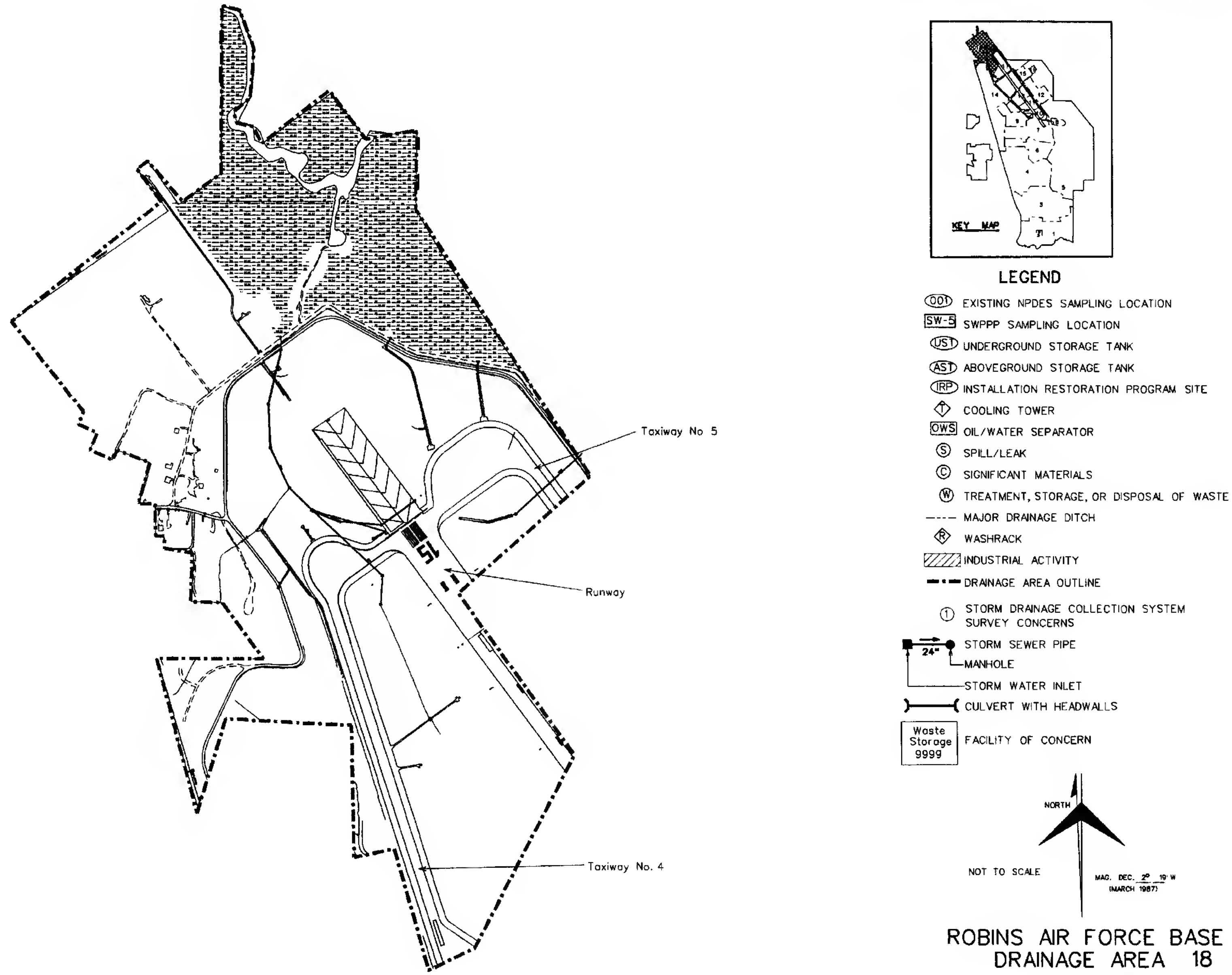
ES ENGINEERING-SCIENCE

Figure D.17



ROBINS AIR FORCE BASE
DRAINAGE AREA 17

ES ENGINEERING-SCIENCE



ROBINS AIR FORCE BASE
DRAINAGE AREA 18

ES ENGINEERING-SCIENCE

APPENDIX E
NPDES PERMIT

PERMIT NO. GA0002852

STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Georgia Water Quality Control Act (Georgia Laws 1964, p. 416, as amended), hereinafter called the "State Act," the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et seq.), hereinafter called the "Federal Act," and the Rules and Regulations promulgated pursuant to each of these Acts,

DEPARTMENT OF THE AIR FORCE
ROBINS AIR FORCE BASE
WR-ALC/EM
2160 Ocmulgee Court
Robins Air Force Base, Georgia 31098

is authorized to discharge from a facility located at

Robins Air Force Base
Warner Robins, in Houston County

to receiving waters Horse Creek, a tributary to the Ocmulgee River and the Ocmulgee River.

in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts I, II, and III hereof.

This permit shall become effective on

This permit and the authorization to discharge shall expire at midnight, October 30, 1998.

DRAFT

Signed this ______ day of ____________________.

Director,
Environmental Protection Division

EPD 2.21-1

STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning effective date and lasting through October 30, 1998, the permittee is authorized to discharge from outfall(s) serial number(s) 001, 002, 003, 004, 005 and 006 -Storm Water Runoff and Cooling Water.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic (Specify Units)	Discharge Limitations Mass Based		Concentration Based		Monitoring Requirements		
	Daily Avg.	Daily Max.	Daily Avg.	Daily Max.	Measurement Frequency	Sample Type	Sample Location
Flow (MGD)	-	-	-	-	-	-	-
BOD (5-day)	-	-	10 mg/l	15 mg/l	1/Month	Grab	Effluent
Oil & Grease	-	-	10 mg/l	15 mg/l	1/Month	Grab	Effluent

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored on the final effluent once per month by a grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

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DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

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2. During the period beginning effective date and lasting through October 30, 1998, the permittee is authorized to discharge from outfall(s) serial number(s) 008 - Industrial Waste Treatment Plant #2 (Electroplating Wastewater).

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic (Specify Units)	Discharge Limitations: Mass Based (lbs/day)		Concentration Based mg/l		Monitoring Requirements		
	Daily Avg.	Daily Max.	Daily Avg.	Daily Max.	Measurement Frequency	Sample Type	Sample Location
Flow (MGD)	-	-	0.46 MGD	0.46 MGD	Daily	Continuous Recording	Effluent
COD	288	576	75 mg/l	150 mg/l	1/Week	Composite	Effluent
Suspended Solids	58	115	15 mg/l	30 mg/l	1/Week	Composite	Effluent
Oil & Grease	38	58	10 mg/l	15 mg/l	1/Month	Grab	Effluent
Total Cyanide	0.3	1.3	0.075mg/l	0.35 mg/l	1/Month	Grab	Effluent
Cadmium	0.4	0.6	0.10 mg/l	0.15 mg/l	1/Week	Composite	Effluent
Chromium	1.2	1.7	0.30 mg/l	0.45 mg/l	1/Week	Composite	Effluent
Copper	0.8	1.2	0.20 mg/l	0.30 mg/l	1/Month	Composite	Effluent
Lead	1.0	1.5	0.25 mg/l	0.40 mg/l	1/Month	Composite	Effluent
Nickel	1.9	2.9	0.50 mg/l	0.75 mg/l	1/Month	Composite	Effluent
Zinc	1.2	1.7	0.30 mg/l	0.45 mg/l	1/Month	Composite	Effluent
Silver	-	-	-	.025 mg/l	2/Year	Composite	Effluent
TTO	-	-	-	2.13 mg/l	2/Year	Grab	Effluent
Total Residual Chlorine	-	-	-	-	1/Week	Grab	Effluent
1,1,1-Trichloroethane	-	-	-	-	2/Year	Grab	Effluent

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored on the final effluent by a grab sample daily.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

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3. During the period beginning effective date and lasting through October 30, 1998, the permittee is authorized to discharge from outfall(s) serial number(s) 009 - Industrial Waste Treatment Plant #1, IRP Leachate and Sewage Treatment Plants.

Such discharges shall be limited and monitored by the permittee as specified:

Effluent Characteristic	Discharge Limitations: Mass Based lbs/day		Concentration Based mg/l		Monitoring Requirements		
	Daily Avg.	Daily Max.	Daily Avg.	Daily Max.	Measurement Frequency	Sample Type	Sample Location
Flow	-	-	-	-	Daily	Continuous Recording	Effluent
BOD (5-day)	243	584	15 mg/l	25 mg/l	2/Week	Composite	Effluent
COD	782	1751	45 mg/l	75 mg/l	1/Week	Composite	Effluent
TSS	243	701	15 mg/l	30 mg/l	2/Week	Composite	Effluent
Ammonia Nitrogen	117	175	5 mg/l	7.5mg/l	2/Week	Grab	Effluent
Oil & Grease	162	350	10 mg/l	15 mg/l	1/Month	Grab	Effluent
Fecal Coliform Bacteria	-	-	200/100 mg/l	400/100 ml	1/Month	Grab	Effluent
Total Residual Chlorine	-	-	-	-	2/Week	Grab	Effluent
Total Phenols	1.62	4.67	0.1 mg/l	0.2 mg/l	1/Month	Grab	Effluent
Lead	-	-	-	0.3 mg/l	2/Year	Composite	Effluent
Silver	-	-	-	0.01 mg/l	2/Year	Composite	Effluent
Copper	-	-	-	1.00 mg/l	2/Year	Composite	Effluent
(1) Volatile Organics, Semivolatile Organics, Pesticides & PCBs					1/Month	Grab	Effluent

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored on the final effluent by a grab sample twice per week.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

(1) See Page 5.

Effluent Characteristic	Discharge Limitations (1.)
	Detection Limit (µg/l)
1,2-Dichlorobenzene	10.0
1,2-Dichloroethane	2.0
1,2-Dichloroethene	5.0
1,3-Dichlorobenzene	10.0
1,4-Dichlorobenzene	10.0
2,4-Dimethylphenol	10.0
2-Butanone	100.0
4-Methyl-2Pentanone	50.0
4-Methylphenol	10.0
Acetone	100.0
Carbon Tetrachloride	2.0
Chlorobenzene	10.0
Chloroform	2.0
Tetrachloroethene	2.0
Toluene	2.0
Total Xylenes	5.0
Trans-1,2-Dichloroethene	5.0
Trichloroethene	2.0
Trichlorofluoromethane	5.0
Vinyl Chloride	10.0
Methylene Chloride	10.0
Bis(2-ethylhexyl) Phthalate	10.0
Fluoranthene	10.0
M/P-Cresol	10.0
Napthalene	10.0
O-Cresol	10.0
Pentachlorophenol	20.0
Chlordane	0.5
PCB-1254	1.0

(1.) The discharge limitations for these pollutants will be Below Detection Level (BDL), using the State's present laboratory detection level.

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B. SCHEDULE OF COMPLIANCE

1. The permittee shall achieve compliance with the effluent limitations specified for discharges in accordance with the following schedule:

N/A

2. No later than 14 calendar days following a date identified in the above schedule of compliance, the permittee shall submit either a report of progress or, in the case of specific actions being required by identified dates, a written notice of compliance or noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

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Note: EPD as used herein means the Environmental Protection Division of the Department of Natural Resources.

C. MONITORING AND REPORTING

1. Representative Sampling

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge.

2. Reporting

Monitoring results obtained during the previous one Month shall be summarized for each month and reported on an Operation Monitoring Report (Form WQ 1.45). Forms other than Form WQ 1.45 may be used upon approval by EPD. These forms and any other required reports and information shall be completed, signed and certified by a principal executive officer or ranking elected official, or by a duly authorized representative of that person, and submitted to the Division, postmarked no later than the 21st day of the month following the reporting period. Signed copies of these and all other reports required herein shall be submitted to the following address:

Georgia Environmental Protection Division
Industrial Wastewater Program
205 Butler Street, S.E.
Floyd Towers East, Suite 1070
Atlanta, Georgia 30334

All instances of noncompliance not reported under Part I. B. and C. and Part II. A. shall be reported at the time the operation monitoring report is submitted.

3. Definitions

a. The "daily average" discharge means the total discharge by weight during a calendar month divided by the number of days in the month that the production or commercial facility was operating. Where less than daily sampling is required by this permit, the daily average discharge shall be determined by the summation of all the measured daily discharges by weight divided by the number of days sampled during the calendar month when the measurements were made.

b. The "daily maximum" discharge means the total discharge by weight during any calendar day.

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c. The "daily average" concentration means the arithmetic average of all the daily determinations of concentrations made during a calendar month. Daily determinations of concentration made using a composite sample shall be the concentration of the composite sample.

d. The "daily maximum" concentration means the daily determination of concentration for any calendar day.

e. For the purpose of this permit, a calendar day is defined as any consecutive 24-hour period.

f. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.

g. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

4. Test Procedures

Monitoring must be conducted according to test procedures approved pursuant to 40 CFR Part 136 unless other test procedures have been specified in this permit.

5. Recording of Results

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

a. The exact place, date, and time of sampling or measurements, and the person(s) performing the sampling or the measurements;

b. The dates the analyses were performed, and the person(s) who performed the analyses;

c. The analytical techniques or methods used; and

d. The results of all required analyses.

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6. Additional Monitoring by Permittee

If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified above, the results of such monitoring shall be included in the calculation and reporting of the values required in the Operation Monitoring Report Form (WQ 1.45). Such increased monitoring frequency shall also be indicated. The Division may require by written notification more frequent monitoring of other pollutants not required in this permit.

7. Records Retention

The permittee shall retain records of all monitoring information, including all records of analyses performed, calibration and maintenance of instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Division at any time.

8. Penalties

The Federal Clean Water Act and the Georgia Water Quality Control Act provide that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit, makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine or by imprisonment, or by both. The Federal Clean Water Act and the Georgia Water Quality Control Act also provide procedures for imposing civil penalties which may be levied for violations of the Act, any permit condition or limitation established pursuant to the Act, or negligently or intentionally failing or refusing to comply with any final or emergency order of the Director of the Division.

A. MANAGEMENT REQUIREMENTS

1. Change in Discharge

   a. Advance notice to the Division shall be given of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements. Any anticipated facility expansions, production increases, or process modifications must be reported by submission of a new NPDES permit application or, if such changes will not violate the effluent limitations specified in this permit, by notice to the Division of such changes. Following such notice, the permit may be modified to specify and limit any pollutants not previously limited.

   b. All existing manufacturing, commercial, mining, and silviculture dischargers shall notify the Division as soon as it is known or there is reason to believe that any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant not limited in the permit, if that discharge will exceed (i) 100 µg/l, (ii) five times the maximum concentration reported for that pollutant in the permit application, or (iii) 200 µg/l for acrolein and acrylonitrile, 500 µg/l for 2,4 dinitrophenol and for 2-methyl-4-6-dinitrophenol, or 1 mg/l antimony.

   c. All existing manufacturing, commercial, mining, and silvicultural dischargers shall notify the Division as soon as it is known or there is reason to believe that any activity has occurred or will occur which would result in any discharge on a nonroutine or infrequent basis, of any toxic pollutant not limited in the permit, if that discharge will exceed (i) 500 µg/l, (ii) ten times the maximum concentration reported for that pollutant in the permit application, or (iii) 1 mg/l antimony.

2. Noncompliance Notification

   If, for any reason, the permittee does not comply with, or will be unable to comply with any effluent limitation specified in this permit, the permittee shall provide the Division with an oral report within 24 hours from the time the permittee becomes aware of the circumstances followed by a written report within five (5) days of becoming aware of such condition. The written submission shall contain the following information:

   a. A description of the discharge and cause of noncompliance; and

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b. The period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate and prevent recurrence of the noncomplying discharge.

3. Facilities Operation

The permittee shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.

4. Adverse Impact

The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

5. Bypassing

a. If the permittee knows in advance of the need for a bypass, it shall submit prior notice to the Division at least 10 days (if possible) before the date of the bypass. The permittee shall submit notice of any unanticipated bypass with an oral report within 24 hours from the time the permittee becomes aware of the circumstances followed by a written report within five (5) days of becoming aware of such condition. The written submission shall contain the following information:

1. A description of the discharge and cause of noncompliance; and

2. The period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate and prevent recurrence of the noncomplying discharge.

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b. Any diversion or bypass of facilities covered by this permit is prohibited, except (i) where unavoidable to prevent loss of life, personal injury, or severe property damage; (ii) there were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime (this condition is not satisfied if the permittee could have installed adequate back-up equipment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance); and (iii) the permittee submitted a notice as required above. The permittee shall operate the treatment works, including the treatment plant and total sewer system, to minimize discharge of the pollutants listed in Part I of this permit from combined sewer overflows or bypasses. Upon written notification by the Division, the permittee may be required to submit a plan and schedule for reducing bypasses, overflows, and infiltration in the system.

6. Sludge Disposal Requirements

Hazardous sludge shall be disposed of in accordance with the regulations and guidelines established by the Division pursuant to the Federal Clean Water Act (CWA) and the Resource Conservation and Recovery Act (RCRA). For land application of nonhazardous sludge, the permittee shall comply with any applicable criteria outlined in the Division's "Guidelines for Land Application of Municipal Sludges." Prior to disposal of sludge by land application, the permittee shall submit a proposal to the Division for approval in accordance with applicable criteria in the Division's "Guidelines for Land Application of Municipal Sludges." Upon evaluation of the permittee's proposal, the Division may require that more stringent control of this activity is required. Upon written notification, the permittee shall submit to the Division for approval, a detailed plan of operation for land application of sludge. Upon approval, the plan will become a part of the NPDES permit. Disposal of nonhazardous sludge by other means, such as landfilling, must be approved by the Division.

7. Sludge Monitoring Requirements

The permittee shall develop and implement procedures to insure adequate year-round sludge disposal. The permittee shall monitor the volume and concentration of solids removed from the plant. Records shall be maintained which document the quantity of solids removed from the plant. The ultimate disposal of solids shall be reported monthly (in the unit of lbs/day) to the Division with the Operation Monitoring Report Forms required under Part I (C)(2) of this permit.

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8. Power Failures

Upon the reduction, loss, or failure of the primary source of power to said water pollution control facilities, the permittee shall use an alternative source of power if available to reduce or otherwise control production and/or all discharges in order to maintain compliance with the effluent limitations and prohibitions of this permit.

If such alternative power source is not in existence, and no date for its implementation appears in Part I, the permittee shall halt, reduce or otherwise control production and/or all discharges from wastewater control facilities upon the reduction, loss, or failure of the primary source of power to said wastewater control facilities.

B. RESPONSIBILITIES

1. Right of Entry

The permittee shall allow the Director of the Division, the Regional Administrator of EPA, and/or their authorized representatives, agents, or employees, upon the presentation of credentials:

a. To enter upon the permittee's premises where a regulated activity or facility is located or conducted to where any records are required to be kept under the terms and conditions of this permit; and

b. At reasonable times, to have access to and copy any records required to be kept under the terms and conditions of this permit; to inspect any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and to sample any substance or parameters in any location.

2. Transfer of Ownership or Control

A permit may be transferred to another person by a permittee if:

a. The permittee notifies the Director in writing of the proposed transfer at least thirty (30) days in advance of the proposed transfer;

b. A written agreement containing a specific date for transfer of permit responsibility and coverage between the current and new permittee (including acknowledgement that the existing permittee is liable for violations up to that date, and that the new per-

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c. The Director, within thirty (30) days, does not notify the current permittee and the new permittee of the Division's intent to modify, revoke and reissue, or terminate the permit and to require that a new application be filed rather than agreeing to the transfer of the permit.

3. Availability of Reports

Except for data deemed to be confidential under O.C.G.A. § 12-5-26 or by the Regional Administrator of the EPA under the Code of Federal Regulations, Title 40, Part 2, all reports prepared in accordance with the terms of this permit shall be available for public inspection at an office of the Division. Effluent data, permit applications, permittee's names and addresses, and permits shall not be considered confidential.

4. Permit Modification

After written notice and opportunity for a hearing, this permit may be modified, suspended, revoked or reissued in whole or in part during its term for cause Including, but not limited to, the following:

a. Violation of any conditions of this permit;

b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts;

c. A change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge; or

d. To comply with any applicable effluent limitation issued pursuant to the order the United States District Court for the District of Columbia issued on June 8, 1976, in Natural Resources Defense Council, Inc. et.al. v. Russell E. Train, 8 ERC 2120(D.D.C. 1976), if the effluent limitation so issued:

(1) is different in conditions or more stringent than any effluent limitation in the permit; or

(2) controls any pollutant not limited in the permit.

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5. Toxic Pollutants

The permittee shall comply with effluent standards or prohibitions established pursuant to Section 307(a) of the Federal Clean Water Act for toxic pollutants, which are present in the discharge within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

6. Civil and Criminal Liability

Nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.

7. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the Federal Clean Water Act.

8. Water Quality Standards

Nothing in this permit shall be construed to preclude the modification of any condition of this permit when it is determined that the effluent limitations specified herein fail to achieve the applicable State water quality standards.

9. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

10. Expiration of Permit

Permittee shall not discharge after the expiration date. In order to receive authorization to discharge beyond the expiration date, the permittee shall submit such information, forms, and fees as are required by the agency authorized to issue permits no later than 180 days prior to the expiration date.

11. Contested Hearings

Any person who is aggrieved or adversely affected by an action of the Director of the Division shall petition the Director for a hearing within thirty (30) days of notice of such action.

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12. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

13. Best Management Practices

The permittee will implement best management practices to control the discharge of hazardous and/or toxic materials from ancillary manufacturing activities. Such activities include, but are not limited to, materials storage areas, in-plant transfer, process and material handling areas; loading and unloading operations; plant site runoff; and sludge and waste disposal areas.

14. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

15. Duty to Provide Information

a. The permittee shall furnish to the Director of the Division, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish upon request copies of records required to be kept by this permit.

b. When the permittee becomes aware that it failed to submit any relevant facts in a permit application or submitted incorrect information in a permit application or any report to the Director, it shall promptly submit such facts and information.

16. Upset Provisions

Provisions of 40 CFR 122.41(n)(1)-(4), regarding "Upset" shall be applicable to any civil, criminal, or administrative proceeding brought to enforce this permit.

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PART III

A. PREVIOUS PERMITS

1. All previous State water quality permits issued to this facility, whether for construction or operation, are hereby revoked by the issuance of this permit. This action is taken to assure compliance with the Georgia Water Quality Control Act, as amended, and the Federal Clean Water Act, as amended. Receipt of the permit constitutes notice of such action. The conditions, requirements, terms and provisions of this permit authorizing discharge under the National Pollutant Discharge Elimination System govern discharges from this facility.

B. SPECIAL REQUIREMENTS

1. Parameters which are monitored on a two/year frequency shall be sampled and analyzed in March and September.

2. Total Toxic Organics includes all of the 111 chemicals listed in 40 CFR 433.11(e) which are reasonably expected to be present in the wastewater. Those substances with quantifiable values greater than 0.01 mg/l will be added together to determine the final concentration.

3. The permittee shall perform chronic bioassays of the final combined effluent (Outfalls 008 and 009) on a quarterly basis, and the bioassay results shall be submitted to the Division no later than fifteen (15) days following the end of that quarter.

   Should any quarterly test indicate toxicity, chronic bioasays will be increased to once per month for that quarter and the following quarter. If none of the follow-up monthly chronic bioassays indicate toxicity, quarterly testing may resume. Should any of the monthly follow-up chronic bioassays indicate apparent toxicity, the permittee shall implement Part III, Section C of this permit when so notified by the Division. The initial stages of this implementation may require additional testing, monitoring and evaluation of the apparent toxicity to enable the delineation of a formal toxic reduction evaluation plan.

4. The combined Zone 1 and Zone 3 leachate flow to Industrial Waste Treatment Plant # 1, which ultimately discharges through Outfall 009, shall not exceed 45 gpm.

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C. BIOMONITORING AND TOXICITY REDUCTION REQUIREMENTS

The permittee may not discharge toxic wastes in concentrations or combinations which are harmful to humans, fish or aquatic life. The permittee shall ensure that the effluent being discharged does not kill 10% or more of the exposed test organisms in 96 hours or less, when the test solution contains volumes of effluent and stream water proportional to the plant design flow and the 7Q10 flow of the receiving stream.

1. If toxicity is suspected in the permittee's effluent, the Division may require the permittee to develop a program for whole effluent biomonitoring. The schedule will be as follows:

   a. Within 90 days of Division notification, a study plan detailing the test methodology and test organisms shall be submitted for conducting forty-eight hour acute static renewal tests of the final effluent. If residual chlorine is present in the final effluent from treatment and/or disinfection processes, a prechlorinated or dechlorinated sample will also be tested.

   b. Within 90 days of Division approval of the study plan, the permittee will conduct and submit the results of the forty-eight hour static renewal tests.

2. If toxicity is found in the permittee's effluent, the permittee shall, within 90 days of written notification by the Division, submit a Toxicity Reduction Evaluation (TRE) plan to the Division. The TRE plan shall detail the action the permittee will implement to eliminate toxicity. Within 270 days of Division approval of the TRE plan, the permittee shall complete implementation of the TRE plan and conduct follow-up biomonitoring of the effluent in accordance with the approved TRE plan. If toxicity is still indicated, the permittee shall continue the TRE plan. The TRE plan shall not be complete until the permittee has eliminated the toxicity in its effluent. On a case specific basis, chronic toxicity testing procedures may be required for the definitive determination that toxicity has been eliminated.

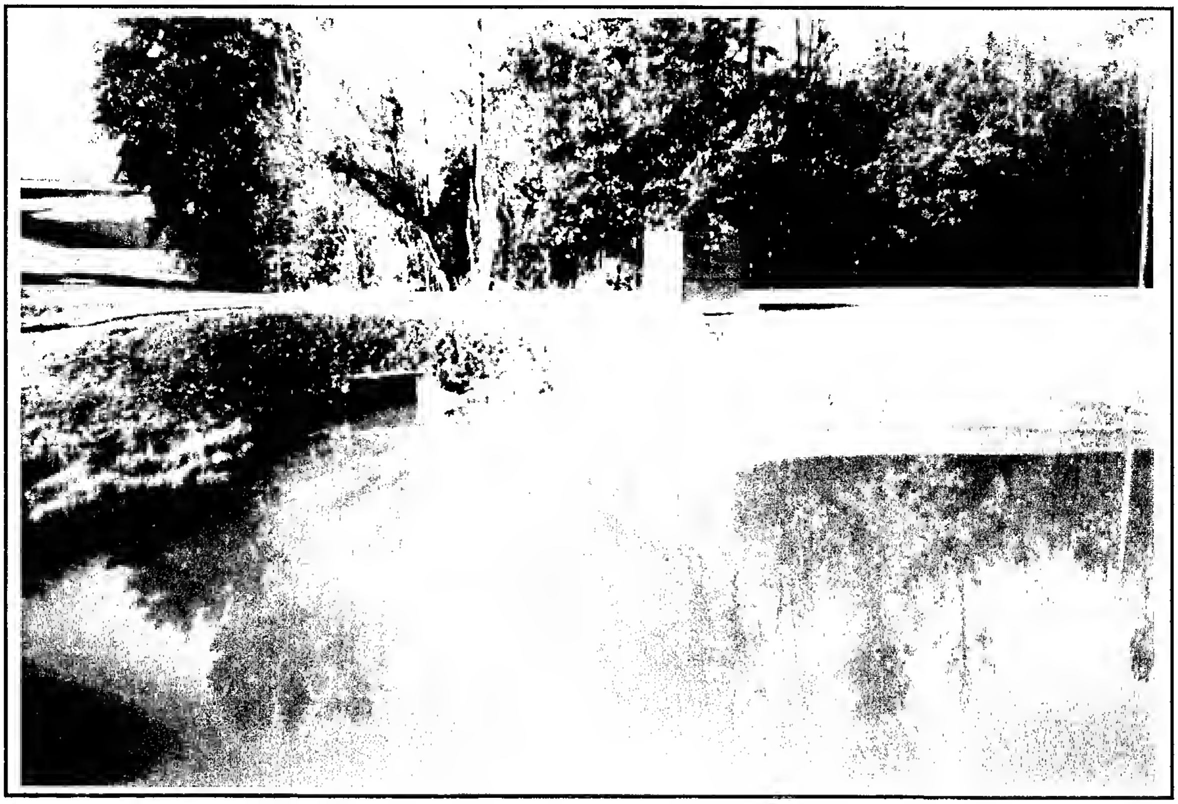
3. If toxicity is not indicated initially, or if there are substantial changes in the effluent composition, the permittee may be required to repeat the forty-eight hour static renewal test upon notification by the Division. On a case specific basis, chronic toxicity testing procedures may also be required.

Upon approval by the Division, all study plans and TRE plans will become part of the requirements of this permit.

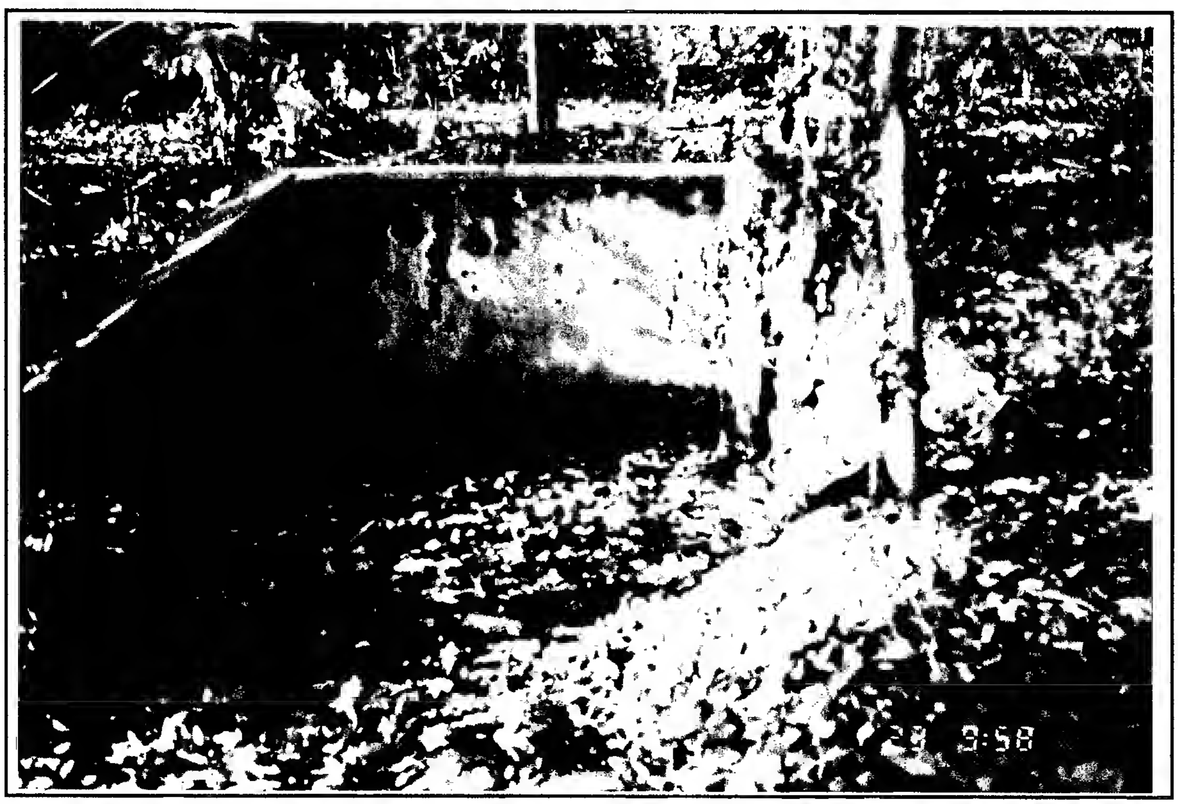
DRAFT

APPENDIX F
OUTFALL LOCATION PHOTOGRAPHS

ROBINS AIR FORCE BASE
SWPPP SAMPLE OUTFALL LOCATIONS

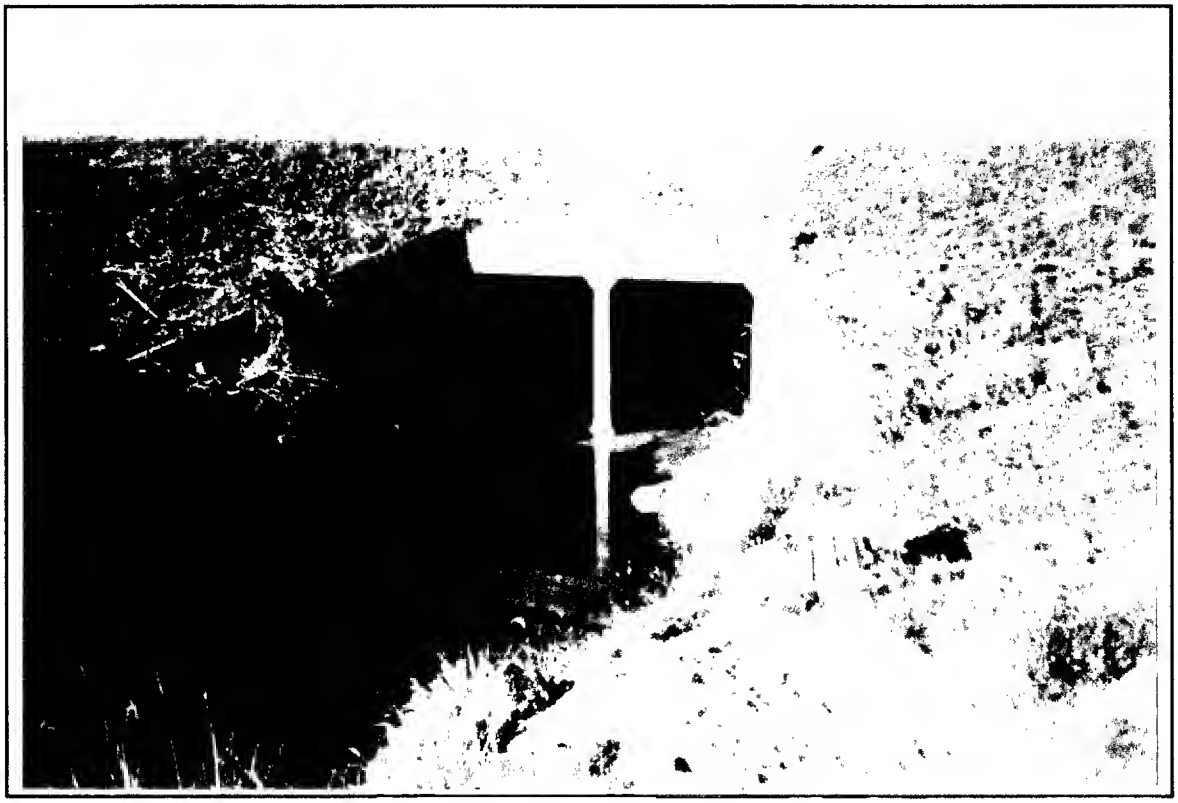


Sample Outfall Location #1 (SW-1)



Sample Outfall Location #2 (SW-2)

ROBINS AIR FORCE BASE
SWPPP SAMPLE OUTFALL LOCATIONS

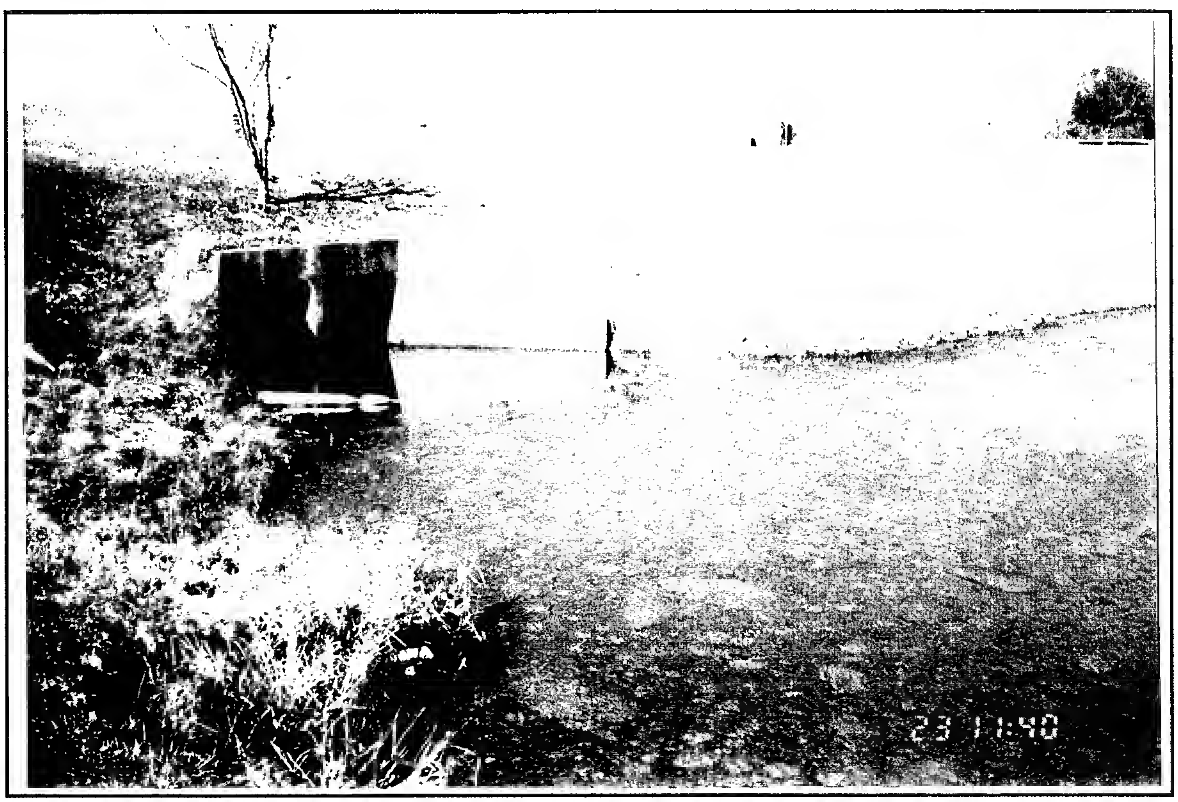


Sample Outfall Location #3 (SW-3)

Sample Outfall Location #4 (SW-4)

ROBINS AIR FORCE BASE
SWPPP SAMPLE OUTFALL LOCATIONS

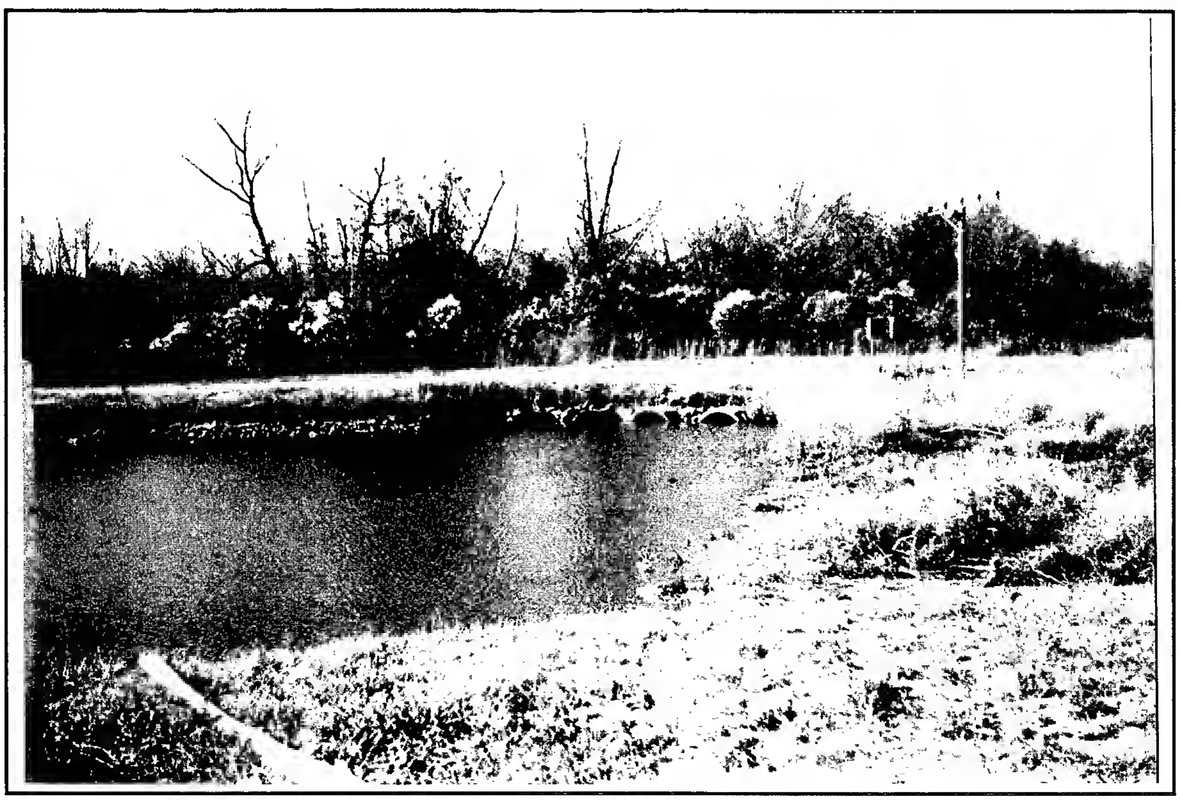
Sample Outfall Location #5 (SW-5)



Sample Outfall Location #6 (SW-6)

ROBINS AIR FORCE BASE
SWPPP SAMPLE OUTFALL LOCATIONS

Sample Outfall Location #7 (SW-7)



Sample Outfall Location #8 (SW-8)

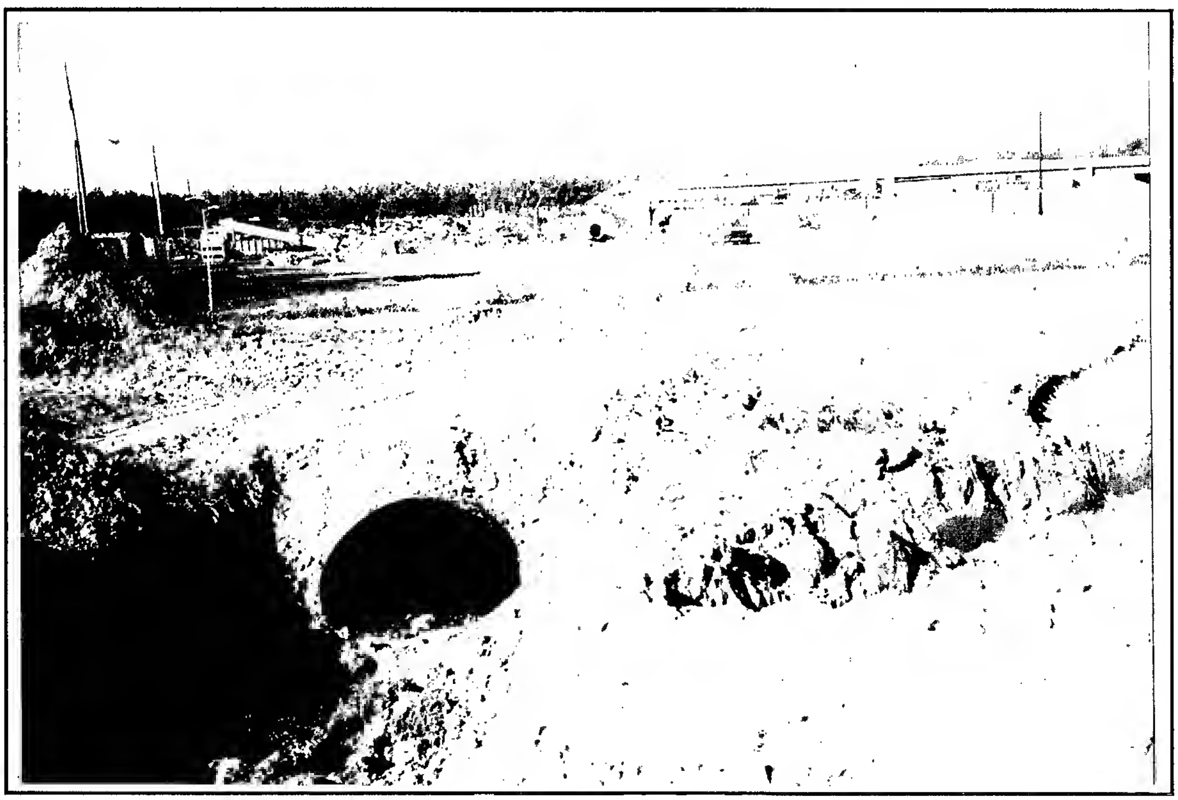
ROBINS AIR FORCE BASE
SWPPP SAMPLE OUTFALL LOCATIONS

Sample Outfall Location #9 (SW-9)

Sample Outfall Location #10 (SW-10)

ROBINS AIR FORCE BASE
SWPPP SAMPLE OUTFALL LOCATIONS

Sample Outfall Location #11 (SW-11)



Sample Outfall Location #12 (SW-12)

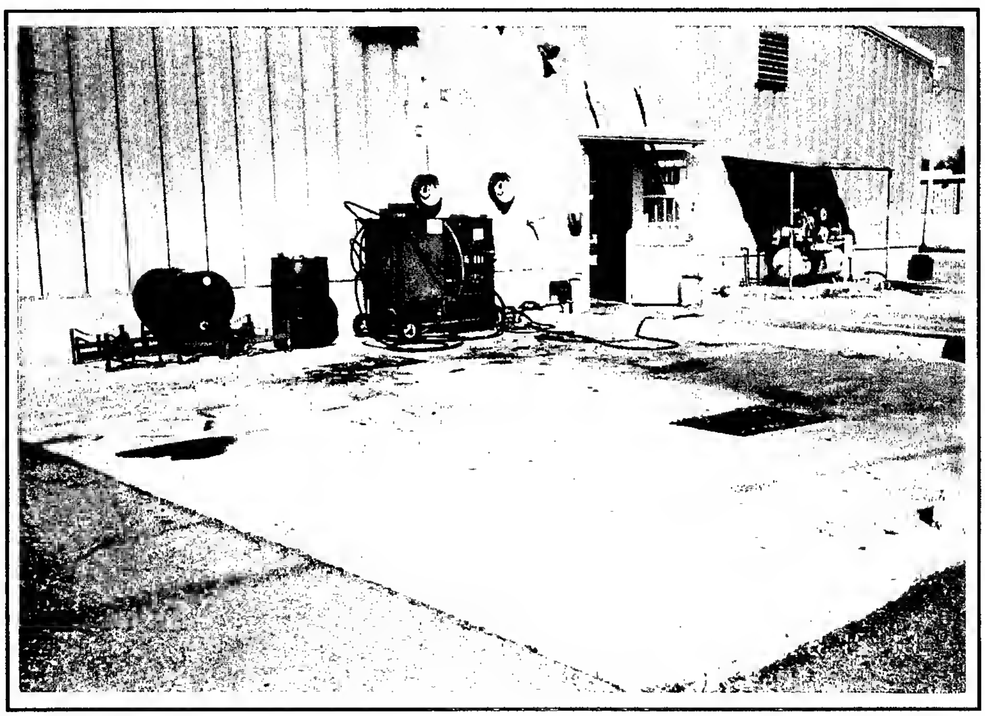
APPENDIX G
POTENTIAL CONTAMINANT SOURCE PHOTOGRAPHS

DA2-1

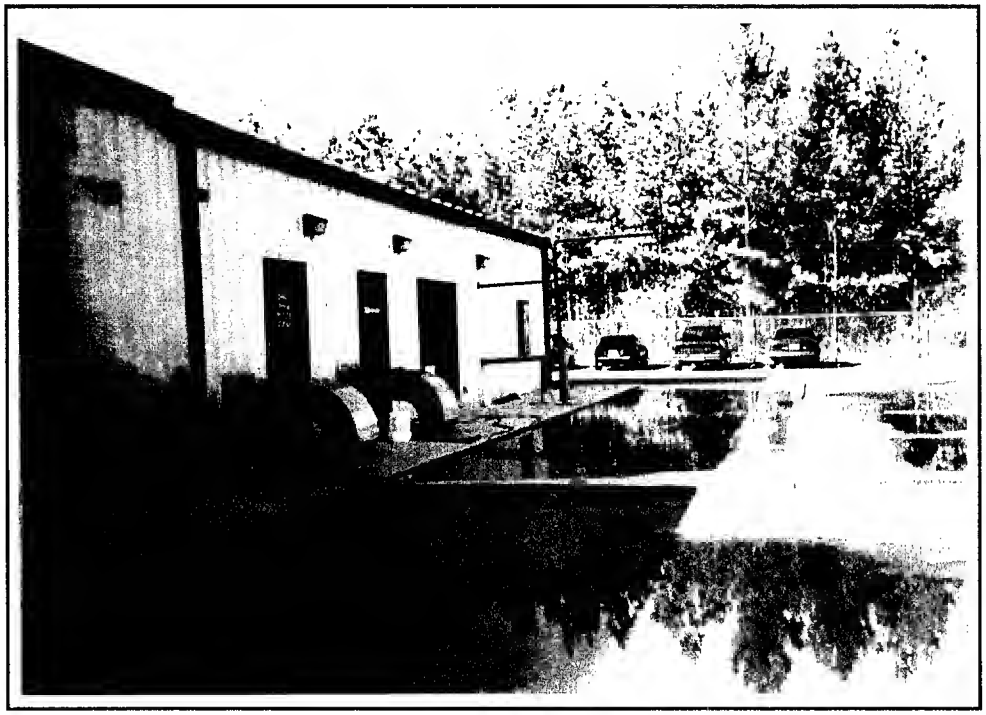
DA2-2


WASTE OIL DUMP
1 USED OIL ONLY
2 USE FUNNEL
3 DO NOT LEAVE EMPTY
CONTAINERS ON SITE

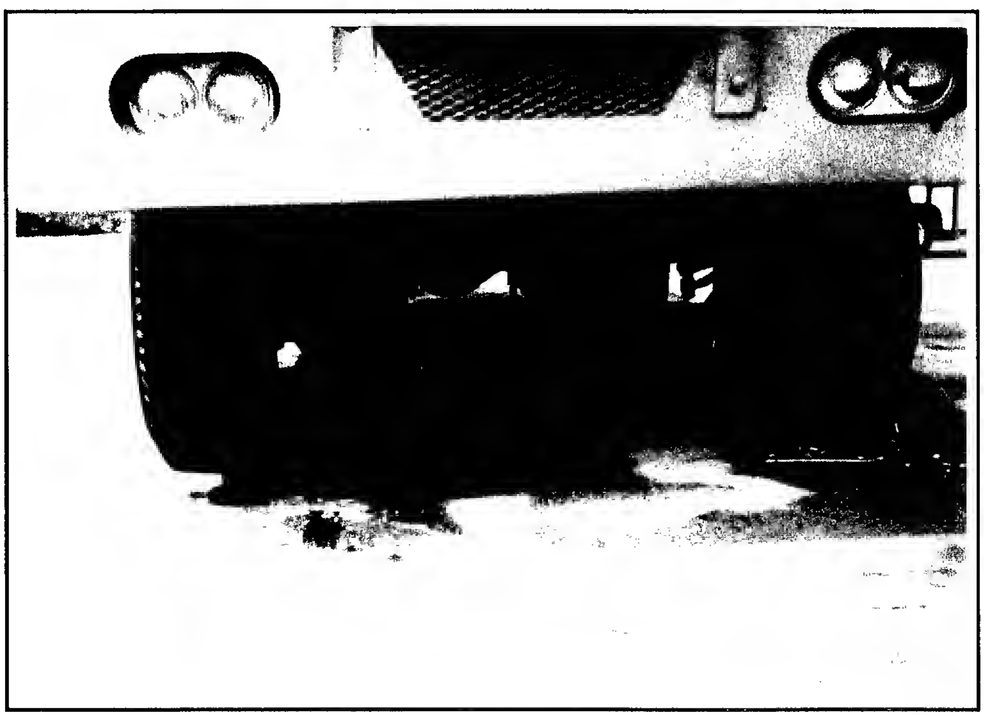
DA3-1



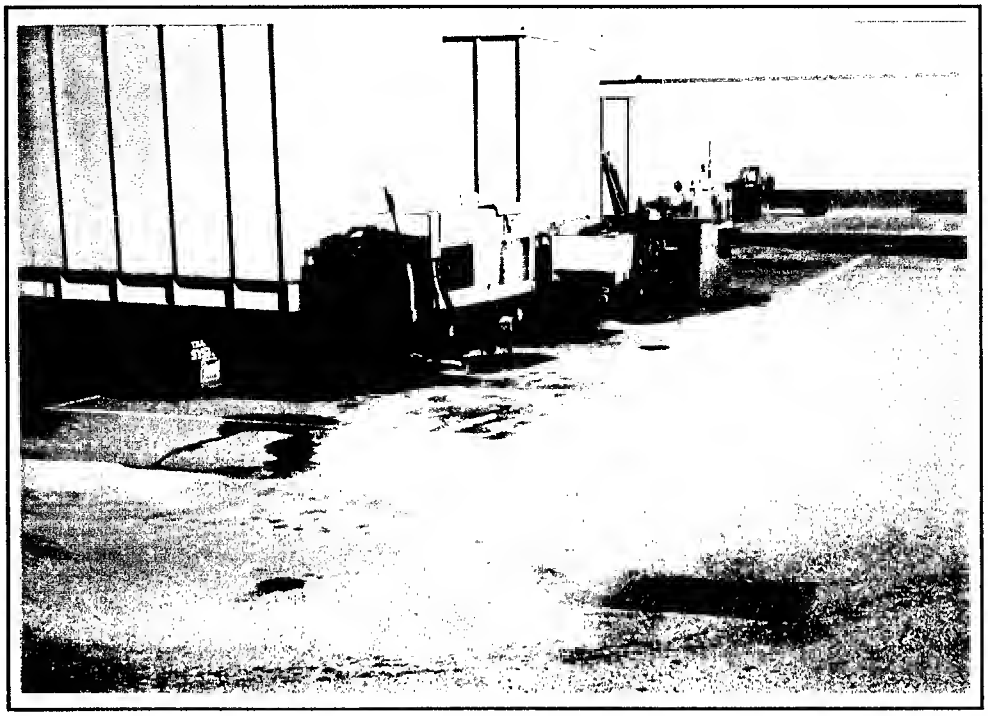
DA3-2



DA3-3

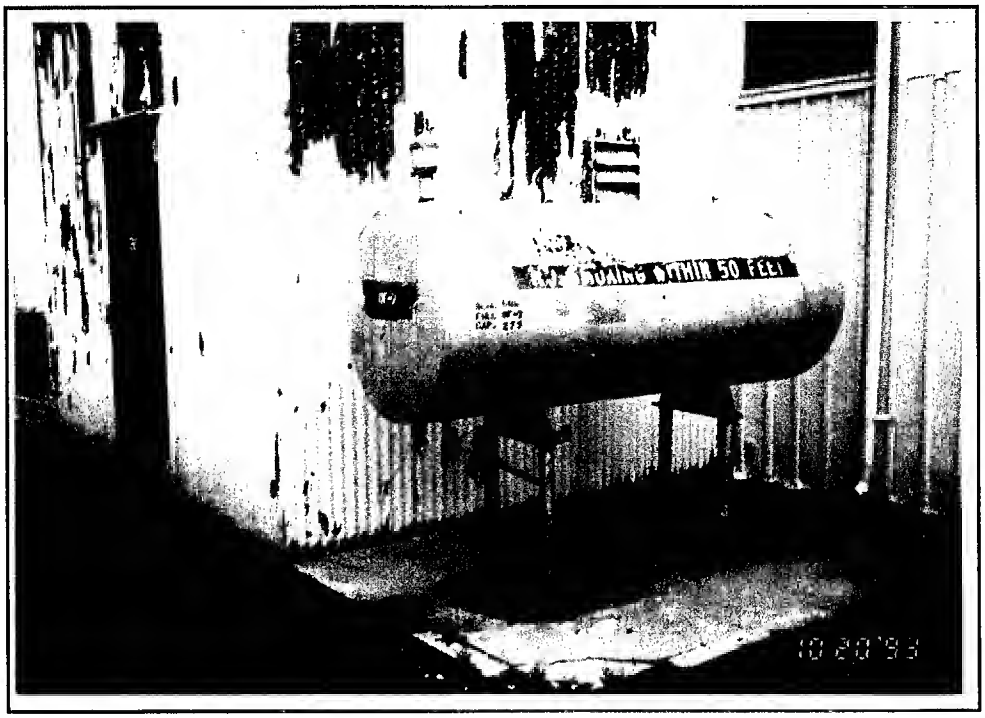


DA4-1



DA4-2

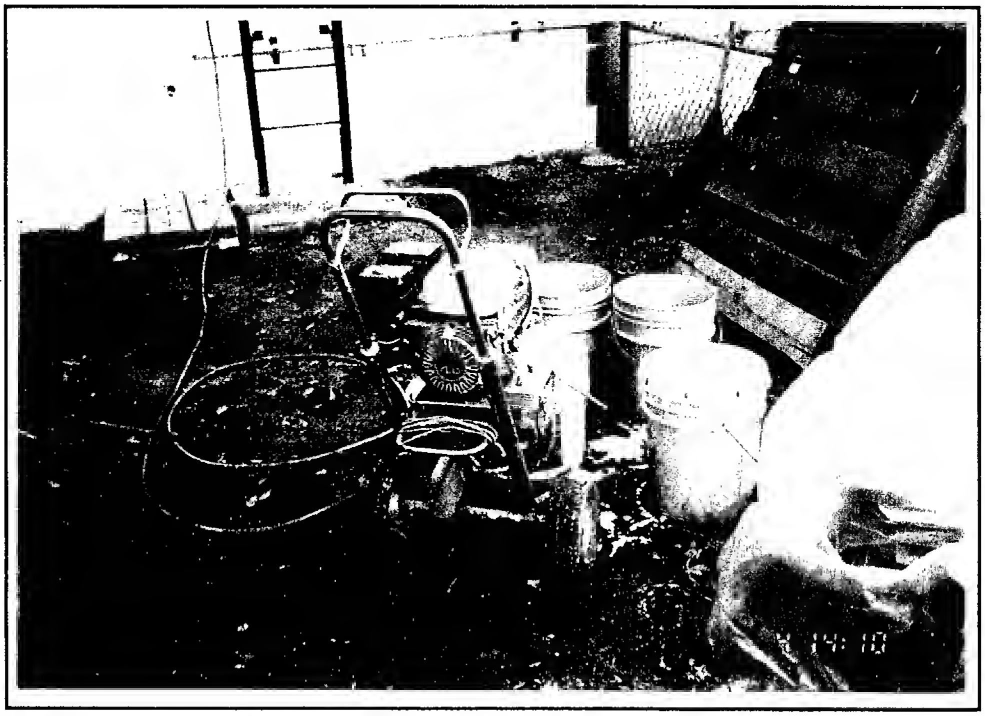
DA4-3



DA4-4

DA4-5

ROBINS AIR FORCE BASE
SWPPP POTENTIAL CONTAMINANT SOURCES

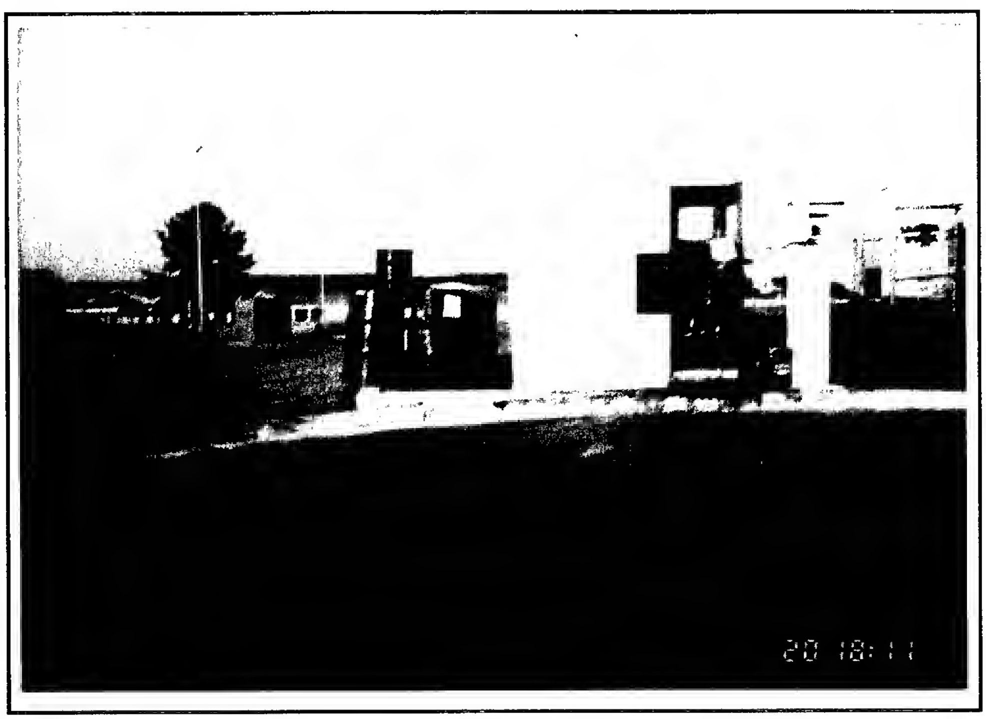


DA7-1

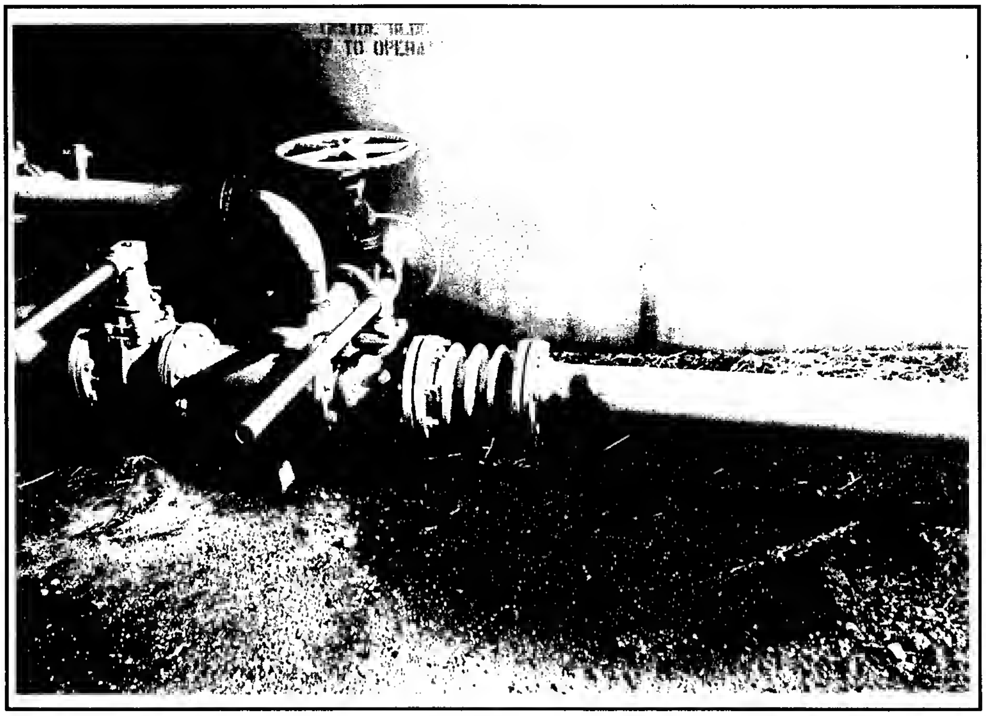
DA7-2

ROBINS AIR FORCE BASE
SWPPP POTENTIAL CONTAMINANT SOURCES

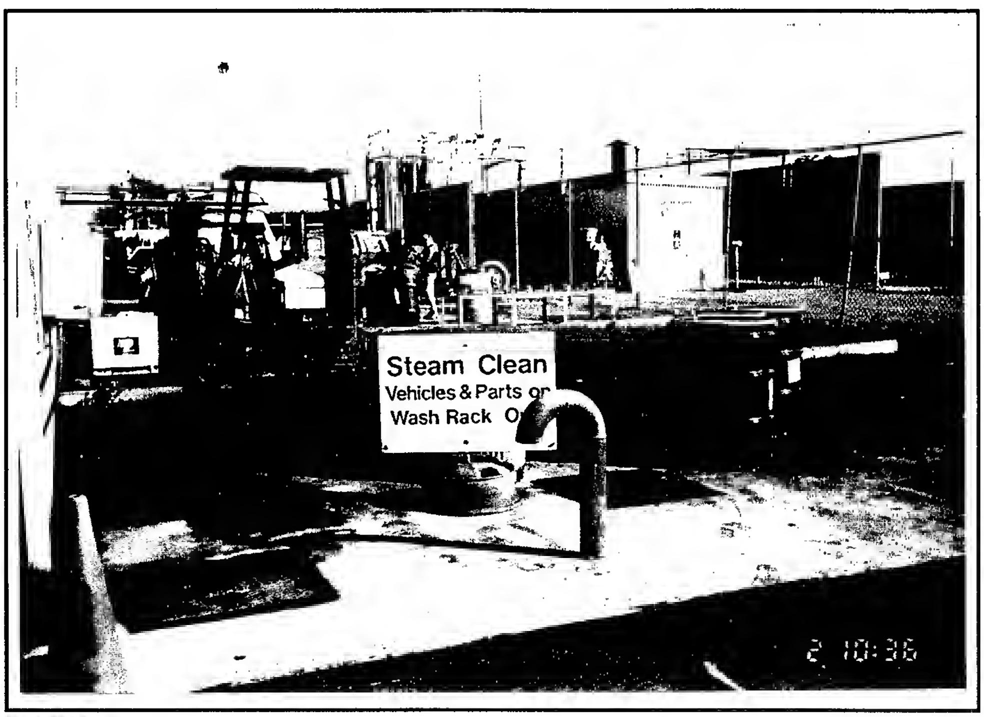
DA7-3



DA7-4



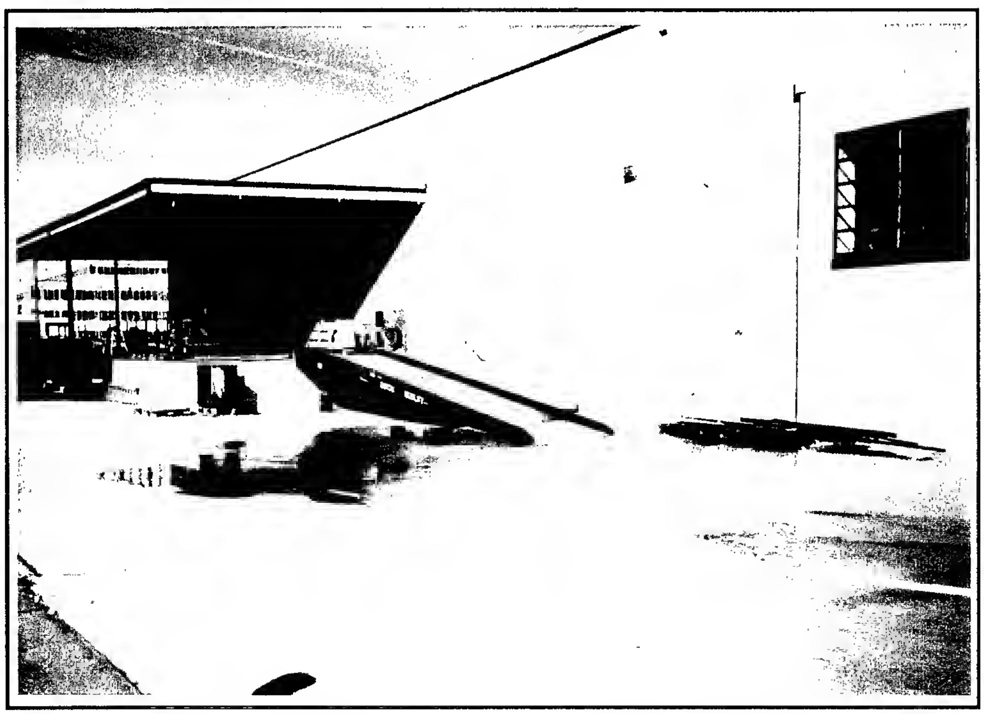
DA7-5



DA7-6

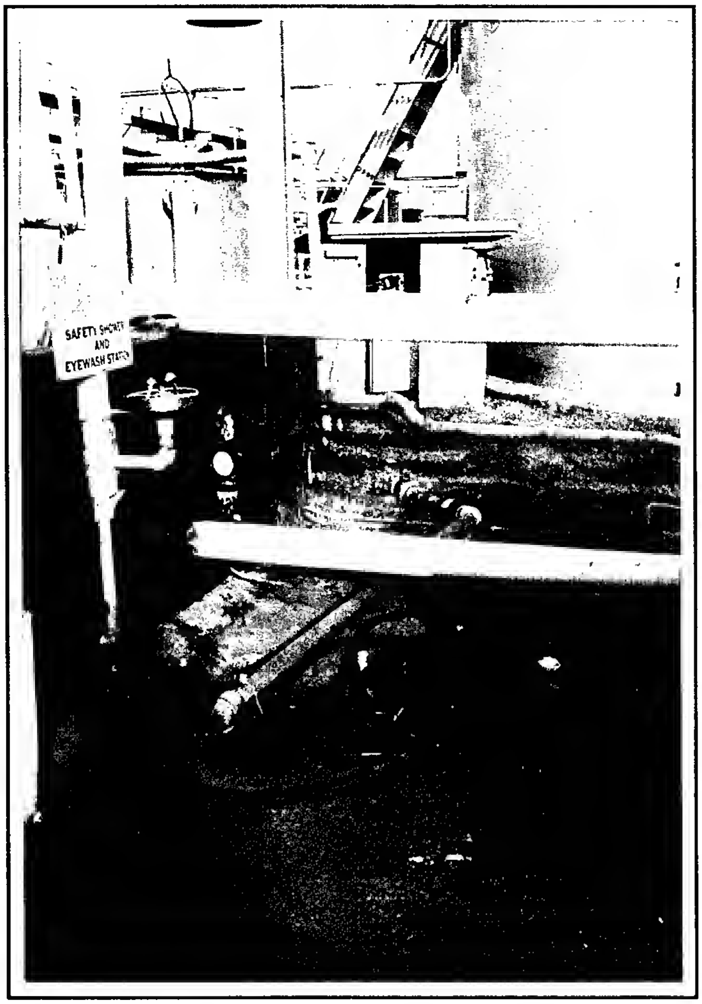
ROBINS AIR FORCE BASE
SWPPP POTENTIAL CONTAMINANT SOURCES

DA7-7



DA9-1

ROBINS AIR FORCE BASE
SWPPP POTENTIAL CONTAMINANT SOURCES



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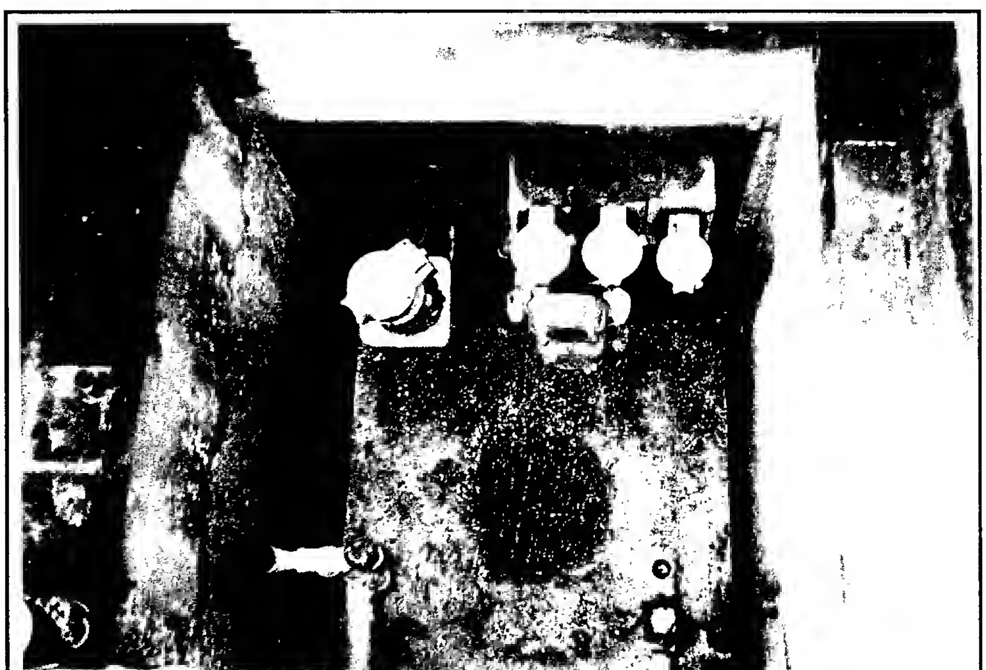
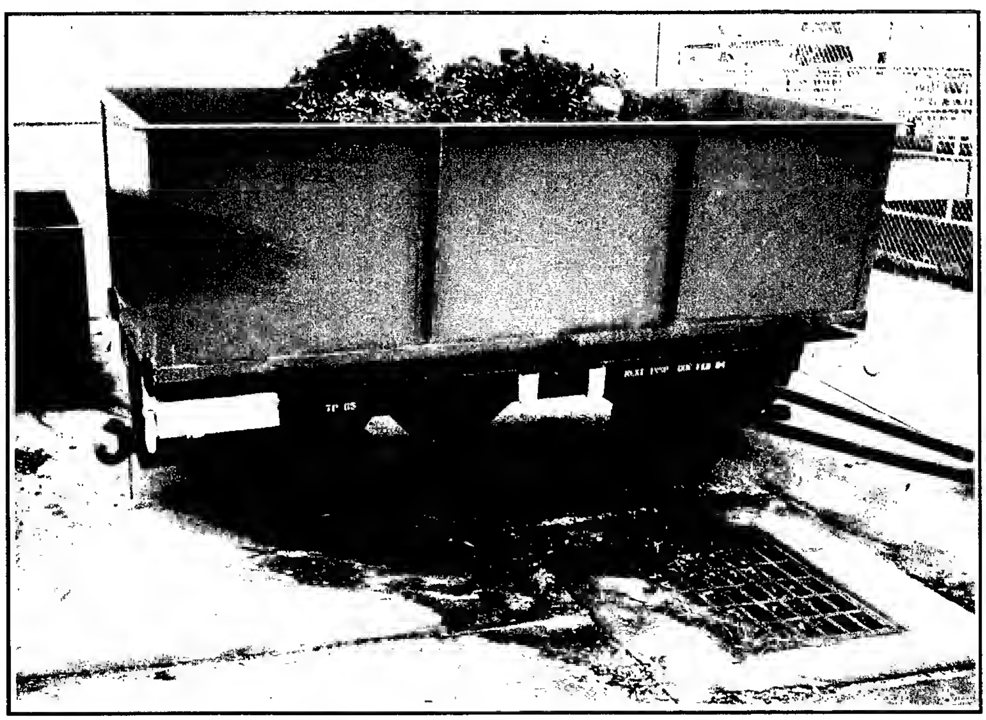


DA9-3

ROBINS AIR FORCE BASE
SWPPP POTENTIAL CONTAMINANT SOURCES

DA9-4



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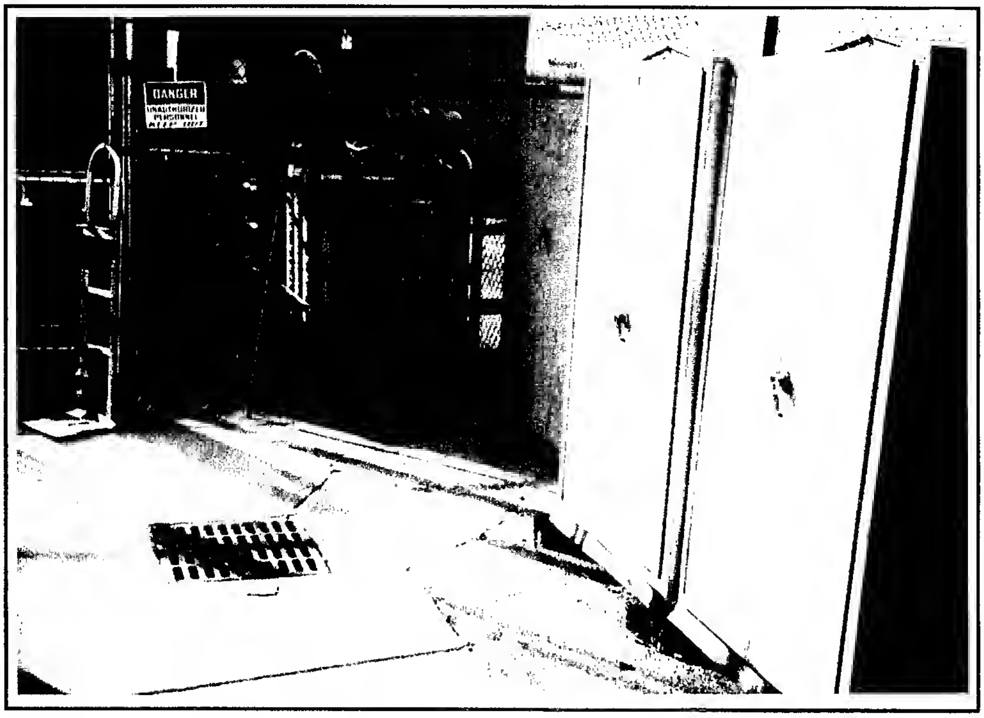

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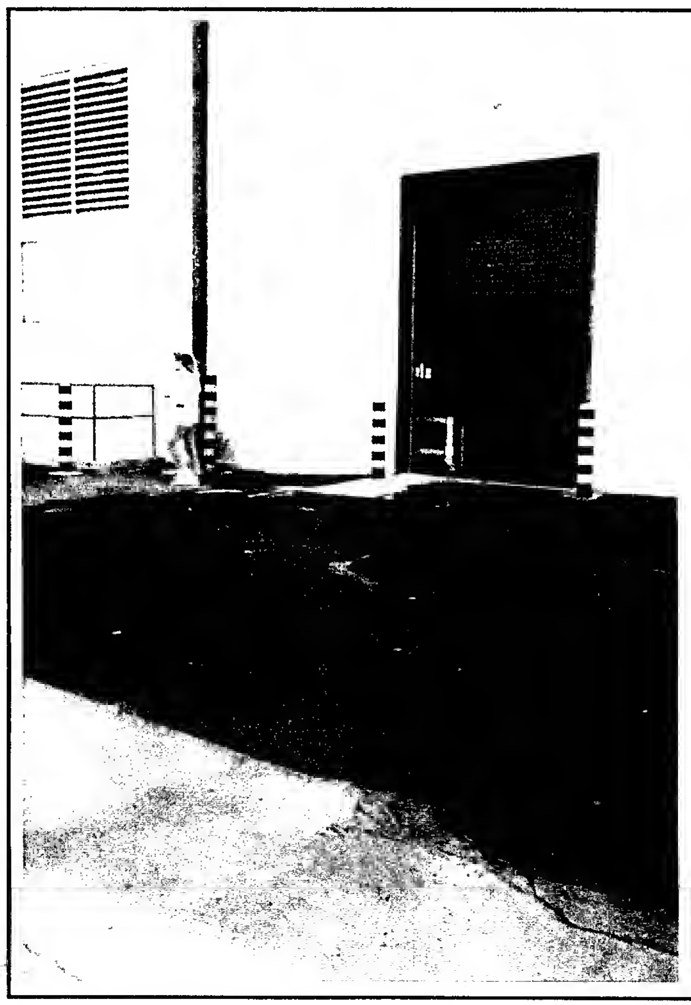
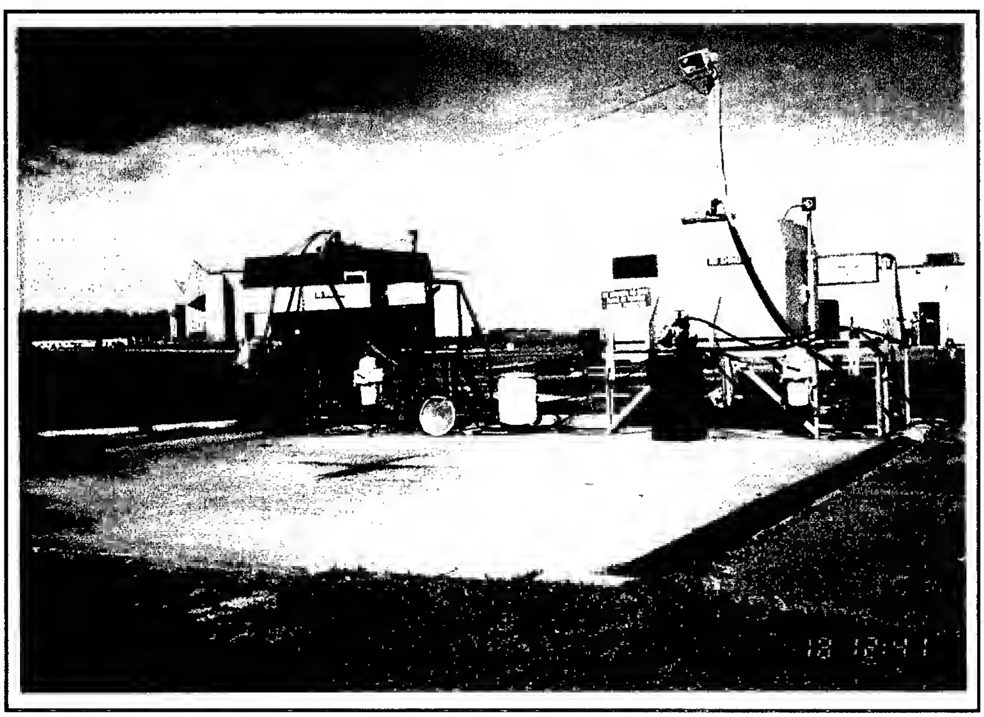


DA9-7

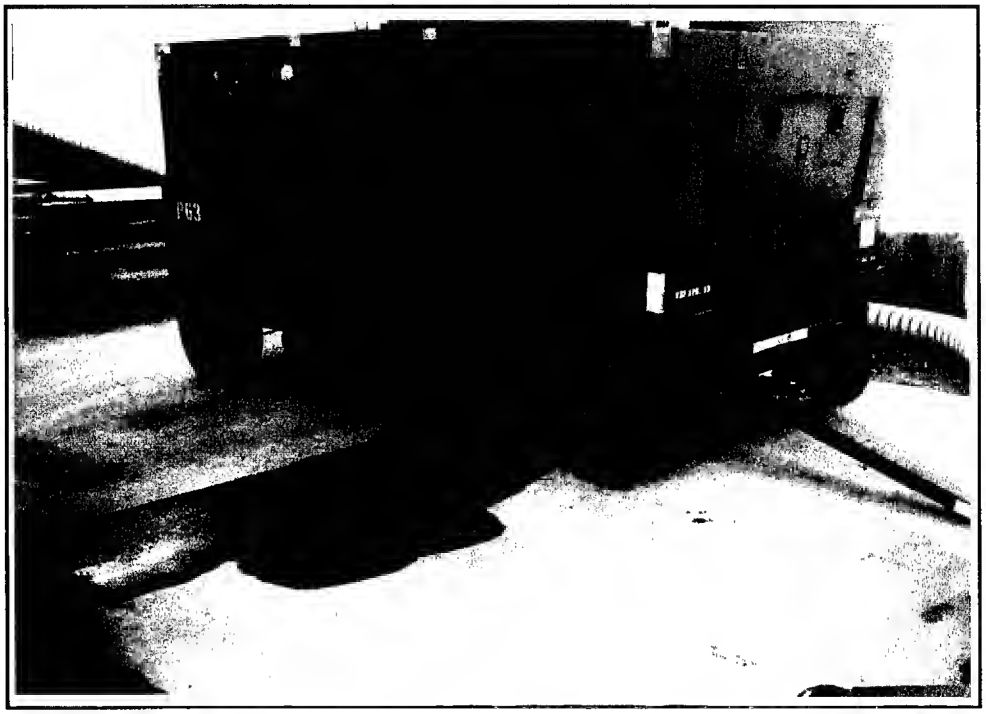
ROBINS AIR FORCE BASE
SWPPP POTENTIAL CONTAMINANT SOURCES

DA14-1



DA14-2

ROBINS AIR FORCE BASE
SWPPP POTENTIAL CONTAMINANT SOURCES



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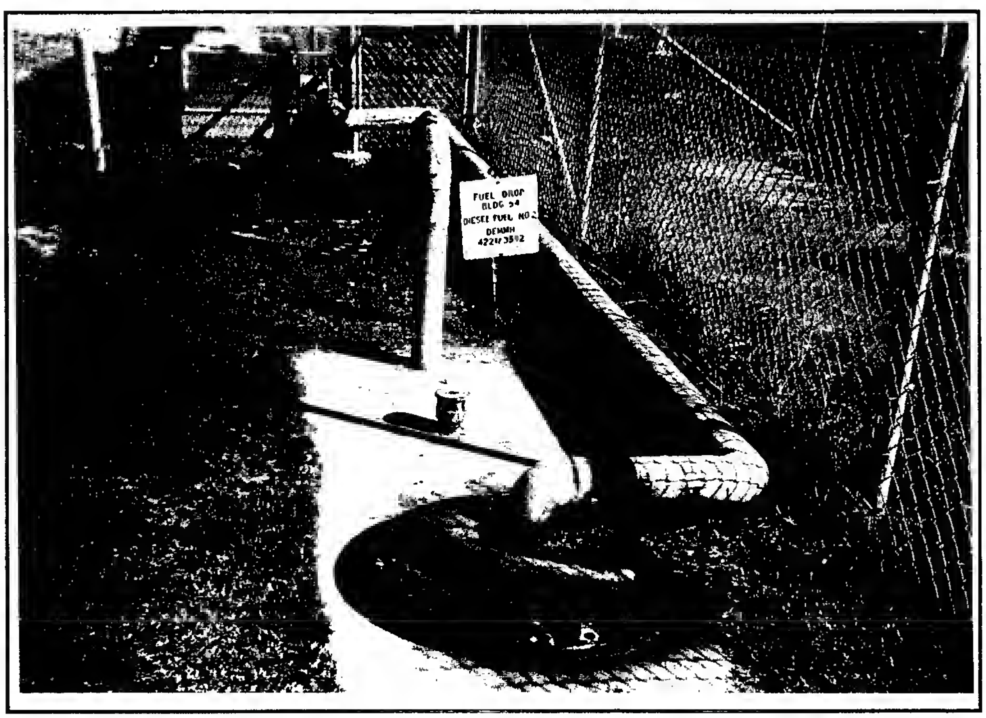
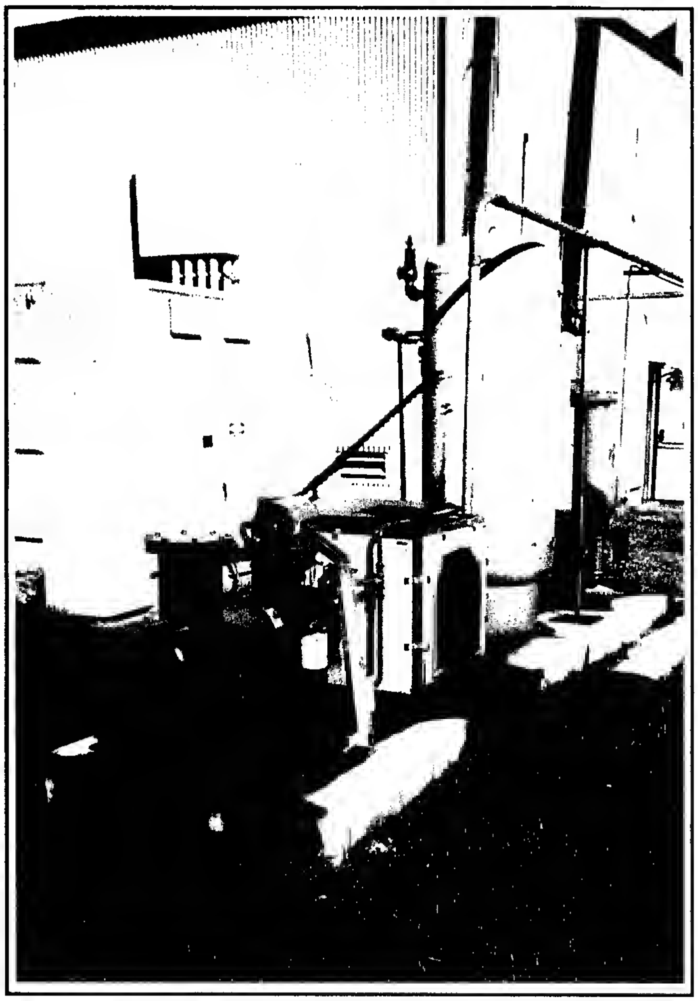


DA14-4

ROBINS AIR FORCE BASE
SWPPP POTENTIAL CONTAMINANT SOURCES

DA14-5



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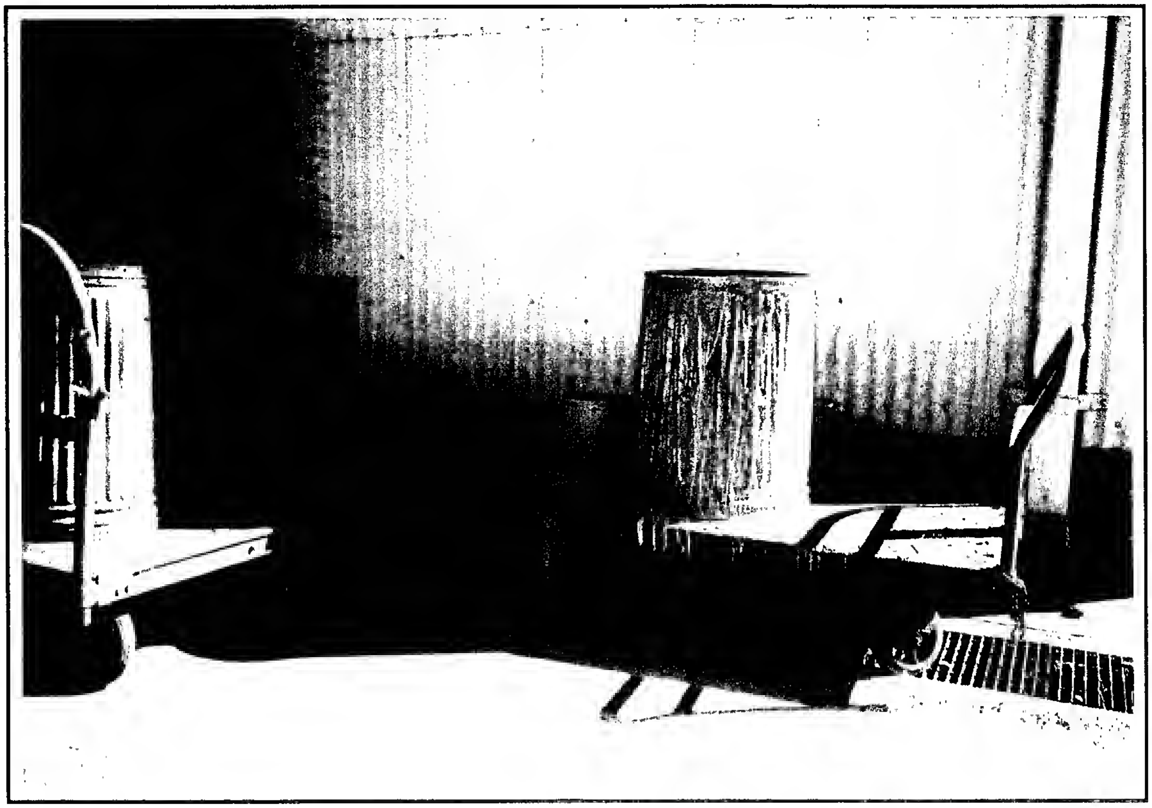

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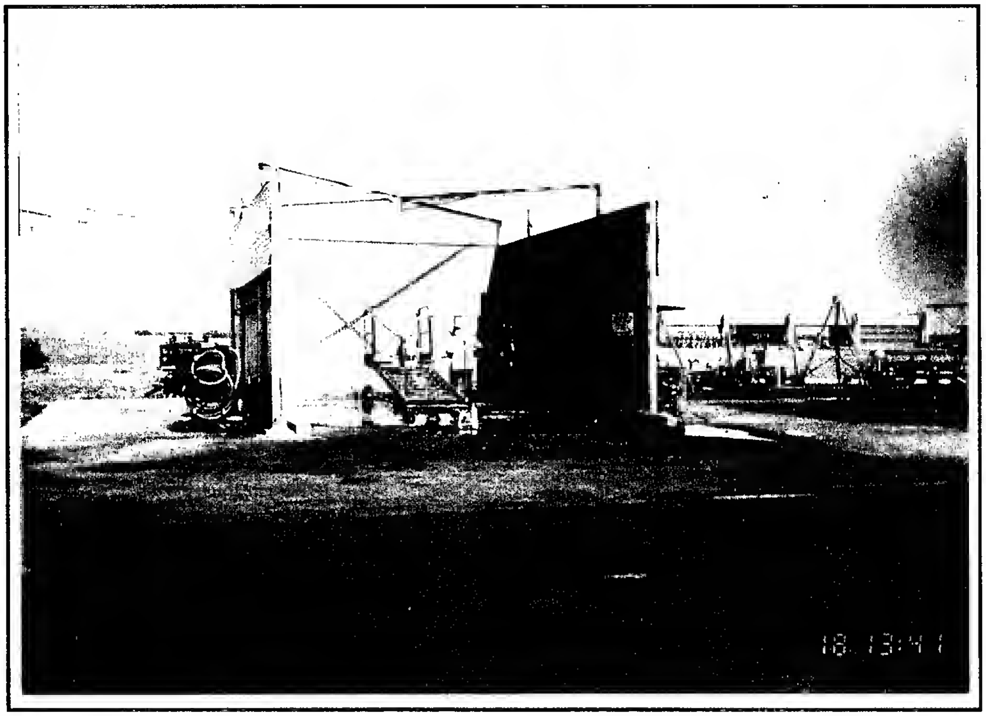
ROBINS AIR FORCE BASE
SWPPP POTENTIAL CONTAMINANT SOURCES



DA14-8

DA17-1

APPENDIX H
1993-1994 SAMPLING REPORT

FINAL

1993-1994 SWPPP Water Quality Sampling Report

Prepared For

Armstrong Laboratory/OEB
Brooks AFB, Texas

and

Directorate of Environmental Management
Robins AFB, Georgia

Prepared By

ENGINEERING-SCIENCE, INC.
Atlanta, Georgia

March 1994
721002

FINAL

1993 - 1994 SWPPP
WATER QUALITY SAMPLING REPORT

PREPARED FOR

ARMSTRONG LABORATORY / OEB
Brooks AFB, Texas

and

DIRECTORATE OF
ENVIRONMENTAL MANAGEMENT
Robins AFB, Georgia

March 1994

G/721002/COV/PM5/DSS/0394

NOTICE

Engineering-Science, Inc. has prepared this report for the United States Air Force for the purpose of aiding in the implementation of Air Force water regulations and Federal Clean Water Act regulations. It is not an endorsement of any product. The views expressed herein are those of the contractor and do not necessarily reflect the official views of the publishing agency, the United States Air Force or the Department of Defense.

WATER QUALITY SAMPLING REPORT
ROBINS AIR FORCE BASE, GEORGIA

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ROBINS AIR FORCE BASE, GEORGIA
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SECTION 1
INTRODUCTION

According to the requirements of the State of Georgia General Permit, Robins Air Force Base (RAFB) is required to establish a storm water monitoring program that involves the annual collection of water samples at specified storm water outfalls and analysis of those samples for the presence of pollutants. The analytical data derived from the analyses provides information on the general quality of the storm water discharge coming from RAFB, identifies the types and concentrations of pollutants present in the discharge, indicates the potential environmental risk of the storm water discharge, and helps in identifying potential sources of storm water pollution at RAFB.

The information gathered during the storm water monitoring program assists RAFB in the following objectives:

- Ensuring that storm water discharges comply with all requirements specified in the Georgia General Permit;
- Ensuring that practices to control pollutants in storm water discharges at RAFB are evaluated and modified to meet changing conditions;
- Aiding in the implementation of the Storm Water Pollution Prevention Plan (SWPPP) required by the Georgia General Permit; and
- Measuring the effectiveness of Best Management Practices (BMPs) in removing pollutants in storm water discharges.

This Water Quality Sampling Report, a part of the 1993-1994 SWPPP for RAFB, details the storm water sampling effort conducted at RAFB in November and December 1993. The analytical results of this effort are provided and their significance is described.

1.1 MONITORING REQUIREMENTS

Specific requirements apply to this storm water monitoring program. These requirements are given in the Georgia General Permit and in the EPA document, *NPDES Storm Water Sampling Guidance Document* (July 1992). These requirements are outlined in the following paragraphs. For greater detail, refer to these aforementioned documents.

The storm water monitoring program begins at the effective date and lasts through the expiration date of the Georgia General Permit for RAFB. During the period, the storm water discharges identified in this report are to be monitored at least annually.

Specific criteria have been established for the type of rain event during which samples may be collected. Pursuant to State requirements, the rain event shall result in greater than 0.1 inch accumulation and shall occur at least 72 hours after the previously measurable rain event.

Two types of samples shall be collected at each discharge during a rain event:

- grab samples; and
- composite samples.

Grab samples are individual samples collected from a single location during a time duration not exceeding 15 minutes. A composite sample is a sample that is collected over a period of time and typically consists of a series of discrete samples which are combined.

Specific criteria apply to collecting grab and composite samples at each storm water discharge during a rain event. Grab samples shall be collected during the first 30 minutes of the discharge. Composite samples shall be accumulated from each storm water discharge at a rate of three discrete sample aliquots per hour. These discrete sample aliquots shall be separated in time from one another by a minimum of 15 minutes. These discrete sample aliquots shall be collected during either the first three hours of discharge or for the entire discharge (if the rain event is less than three hours long).

1.2 OVERVIEW OF THE NOVEMBER-DECEMBER 1993 STORM WATER SAMPLING EFFORT

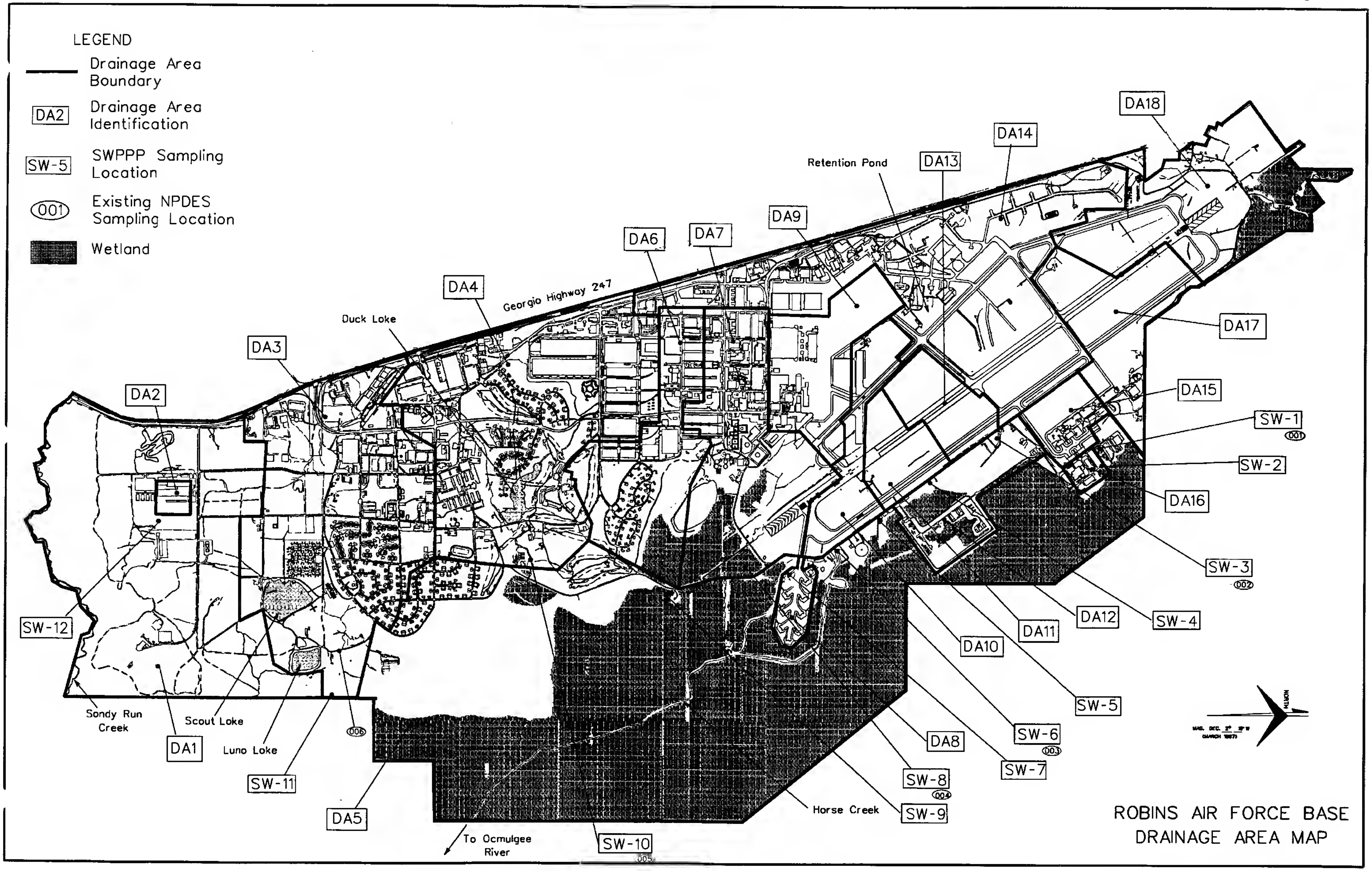
1.2.1 Composite Samples

As described in Section 1.1 of this report, composite samples shall be collected at each discharge during a rain event. During this storm water monitoring program, time weighted samples were collected at each of the identified discharges at RAFB. Composite samples were comprised of several discrete equal-volume samples, each collected at equal intervals during the sampling period.

1.2.2 Sampling Locations

Figure 1.1 shows a site plan of RAFB identifying the locations of the storm water discharges where sampling took place during the sampling effort. Twelve storm water discharge locations were identified (numbered SW-1 through SW-12) from which samples were collected. One grab sample and one composite sample were collected at each of the twelve storm water discharges. These discharge locations are selected outfalls for the major drainage areas existing on RAFB that discharge storm water associated with industrial activity.

Figure 1.1



ROBINS AIR FORCE BASE
DRAINAGE AREA MAP

ES ENGINEERING-SCIENCE

1.2.3 Sampling Dates

Because of the large number of discharge locations that were chosen for sampling, the storm water sampling effort was divided between two rain events. Discharge locations 1 through 8 (see Figure 1.1) were sampled during a rain event that occurred during the early morning hours of November 5, 1993. Discharge locations 9 through 12 were sampled during a rain event that occurred during the late evening of December 4, 1993.

1.2.4 Analytical Methods

The water samples collected during the sampling effort were analyzed for a wide range of analytes and other parameters using a number of analytical methods. The following sections outline these methods.

1.2.4.1 Laboratory Analytical Methods

Savannah Laboratories and Environmental Services, Inc. (Savannah Laboratories) was contracted to conduct the laboratory analyses. This laboratory is located in Savannah, Georgia, and is certified (Figure 1.2) by the State of Georgia to conduct analyses of water samples for chemical parameters.

The analytical methods were performed at Quality Control (QC) Reporting Level II, which is approximately equivalent to USEPA DQO Level 3. Grab samples were not analyzed by the same analytical methods as composite samples. Table 1.1 gives the analytical methods that were applied to the grab samples. Table 1.2 gives the analytical methods that were applied to the composite samples. Note that for the analysis of grab samples for purgeable organics by EPA Method 624, a 25 mL purge volume was employed instead of the conventional 5 mL purge volume. This modification to the method was performed to achieve lower detection limits.

Note also that the composite samples collected during the November 5 rain event were analyzed by the laboratory for residual chlorine, while the composite samples collected during the December 4 rain event were not analyzed by the laboratory for this analyte. The composite samples collected during the December 4 rain event were analyzed in the field for free and total chlorine using a Hach® field test kit.

Finally, note that the composite samples collected during the November 5 rain event were analyzed by the laboratory for fecal coliform using Method SM9222-D. The composite samples collected during the December 4 rain event were analyzed by the laboratory for fecal coliform using Method SM9221-C. The difference in the laboratory methods used for the composite samples collected during the two rain events to analyze for fecal coliform was a result of the laboratory misreading the requested method number for the first of the two rain events. Nevertheless, both of the methods produce comparable results.

Figure 1.2

STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
LABORATORY CERTIFICATION

In accordance with the "Georgia Rules for Safe Drinking Water" and the "Manual for Chemical Certification of Drinking Water Laboratories in Georgia"

SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

Water Laboratory is hereby granted

CERTIFICATION

for the analyses of water samples for Chemical Parameters.

This certification is valid in the State of Georgia, effective this 30th DAY OF September, 1993.

This certification is contingent upon continued accreditation by A2LA *for all parameters listed on the attached document. This certification is non-transferrable.* ***CERTIFICATION EXPIRES February 28, 1995.***

CERTIFICATION NUMBER: 1001

Program Manager, Drinking Water Program

TABLE 1.1

ANALYTICAL METHODS FOR GRAB SAMPLES
ROBINS AFB, GEORGIA

Analyte	Analytical Method	Comments
pH	EPA 150.1	None
Oil and Grease, Total Recoverable	EPA 413.2	None
Cyanide, Total	EPA 33.3	None
Purgeable Organics	EPA 624	A 25 mL purge volume was employed instead of the conventional 5 ml purge volume.

H:\AA002\SAMPLE\T-1-1.WW2

TABLE 1.2

ANALYTICAL METHODS FOR COMPOSITE SAMPLE
ROBINS AFB, GEORGIA

Analyte	Analytical Method	Comments
Residue, Filterable (Total Suspended Solids)	EPA 160.1	None
Residue, Non-Filterable (Total Suspended Solids)	EPA 160.2	None
Biochemical Oxygen Demand (BOD_5)	EPA 405.1	None
Total Metals (Cd, Cr, Cu,Ni, Ag, Zn)	(ICP) EPA 200.7	None
Total Lead by Furnace AA	EPA 239.2	None
Fecal Coliform	SM9222-D	This method was used for samples collected during the Nov. 5, 1993 rain event.
Fecal Coliform	SM9221-C	This method was used for samples collected during the Dec. 4, 1993 rain event.
Fluoride	EPA 340.2	None
Residual Chlorine	SM408A	This method was applied only to the samples collected during the Nov. 5, 1993 rain event.
Nitrogen, Ammonia	EPA 350.1	None
Nitrogen, Kjeldahl, Total	EPA 351.2	None
Nitrogen, Nitrate-Nitrite	DPA 353.2	None
Nitrogen, Organic	EPA 351.2/EPA 30.1	None
Phosphorous, Total	EPA 365.4	None
Chemical Oxygen Demand (COD)	EPA 410.2	None
Phenolics, Total Recoverable	EPA 420.2	None
Organochlorine Pesticides and PCBs	EPA 608	None
Polynuclear Aromatic Hydrocarbons	EPA 610	None
Base/Neutrals and Acids	EPA 62	None

Savannah Laboratory determined that, using the analytical methods given in Tables 1.1 and 1.2, it could meet the detection limit requirements established by the Georgia Environmental Protection Division for National Pollutant Discharge Elimination System (NPDES) analytes.

1.2.4.2 Field Analytical Methods

Only one analytical method was conducted in the field: free and total chlorine. A Hach® field test kit (Hach catalog number 2231-03, Model CN-66T) was used for this analysis. Only the composite samples collected during the December 4 rain event were analyzed using this field method.

SECTION 2
PRESAMPLING PREPARATIONS

This section of the Sampling Report describes the materials and procedures used for collecting water samples during the sampling effort. Since there were two separate rain events during which samples were collected, there were also two discrete periods before each rain event during which sampling equipment and other materials were prepared for sampling. While every effort was made to maintain consistency in materials and procedures between these two preparation periods, some differences existed. Any differences are described in this section.

2.1 DETERMINATION OF TOTAL WATER SAMPLES REQUIRED FOR CHEMICAL ANALYSIS

Before conducting sampling during the two rain events of the sampling effort, the total number of water samples that would be collected during each rain event was identified. In addition to collecting samples for analysis at each discharge point, several field and laboratory quality control (QC) samples were also collected. These QC samples are described in the following paragraphs.

Trip blanks were used to determine if environmental samples were contaminated by volatile organic compounds during shipping and handling. Trip blanks are sample bottles filled by the laboratory with organic-free water and are never opened in the field. The trip blanks were prepared by the laboratory, transported to the field, kept with the environmental samples during the sampling effort, and returned to the laboratory for analysis with the environmental samples. During the sampling effort, one trip blank was included with every shipping cooler that contained samples to be analyzed for purgeable organics by Method EPA 624. These trip blanks were analyzed only for purgeable organics by Method EPA 624.

Field duplicate samples provided a measure of the short-range spatial and temporal variability of the sample matrix at a given location. The analysis of a field duplicate sample indicates both field and laboratory precision. Field duplicate samples are collected as close in time to the collection of the original sample as possible. Field duplicate samples are also collected from the same sampling location as the original sample. For each of the two rain events, field duplicate samples were collected at a frequency of ten percent per analytical method, rounded up to the next whole number.

Matrix spike/matrix spike duplicate (MS/MSD) samples were collected for some analytical methods to provide a mechanism of monitoring laboratory precision and accuracy, and also for providing insight into the way the sample matrix influences the

recovery of analytes in the various methods of analysis. Each MS/MSD sample collected in the field is a single sample that has been collected from a single sampling location at triple the volume of a regular sample. From this single sample the laboratory draws three portions: one to prepare a sample for routine analysis, one to prepare a sample used for matrix spike analysis, and one to prepare a sample used for matrix spike duplicate analysis. For each of the two rain events, MS/MSD samples were collected at a frequency of five percent per applicable analytical method, rounded up to the next whole number.

Table 2.1 provides a breakdown of the numbers of environmental samples, trip blanks, field duplicates, and MS/MSDs that were collected during each of the two sampling efforts. Note that the laboratory analytical method for residual chlorine (SM408A) was not applied to the samples collected during the December 4 rain event. The four composite samples collected during this rain event were analyzed for free and total chlorine in the field using a Hach® field test kit.

2.2 SAMPLING EQUIPMENT AND SUPPLIES

All sample collection activities during the November-December 1993 storm water sampling effort were conducted manually. Grab samples and composite samples were collected using one-liter, wide-mouth glass sampling jars. One of these sampling jars was assigned to each sampling location during each of the two rain events. Attached to these sampling jars were wire handles. The wire was affixed to each jar using a large ring-clamp. The wire handle enabled the sampling jar to be attached to a sampling boom in the event that a sampling location was too far away from the sampling personnel to reach by hand. The sampling booms were made of plastic and had a connector at one end to which the sampling jar handle could be attached. One sampling boom was assigned to each sampling location which required a boom.

For grab samples, the sample was dispensed from the sampling jar into the appropriate sample containers. For composite samples, however, the sampling jar was used to dispense aliquots of sample into a large 10-L glass composite sample jar. One 10-L composite sample jar was assigned to each sampling location during each of the two rain events. (Additional 10-L composite sample jars were required at sampling locations where field duplicate samples and MS/MSD samples were collected.)

Each 10-L composite sample jar had a nipple opening near its base. A flexible tubing assembly, constructed of Tygon® tubing, Teflon® tubing, Teflon® tape, and small hose clamps, was attached to the nipple of each 10-L composite sample jar. This tubing assembly enabled the sampling personnel to contain composite samples within the jar during sampling (with the tubing in an upright position), and to dispense the composite sample from the jar into sample containers after the compositing process was complete (by lowering the mouth of the tubing below the liquid level in the jar). Rubber stoppers, wrapped in Teflon® tape, served as seals for the top openings in the 10-L composite sample jars.

TABLE 2.1

NUMBERS OF WATER SAMPLES FOR CHEMICAL ANALYSIS
NOVEMBER-DECEMBER 1993 STORM WATER SAMPLING EFFORT
ROBINS AFB, GEORGIA

Analytical Method	November 5, 1993 Rain Event				December 4, 1993 Rain Event			
	Number of Environmental Samples	Number of Trip Blanks(A)	Number of Field Duplicate Samples(B)	Number of Env. Samples Used as MS/MSD Samples(C)	Number of Env. Samples	Number of Trip Blanks(A)	Number of Field Duplicate Samples(B)	Number of Env. Samples Used as MS/MSD Samples(C)
pH (EPA 150.1)	8 grab	(D)	1	(E)	4 grab	(D)	1	(E)
Oil and Grease, Total Recoverable (EPA 413.2)	8 grab	(D)	1	1	4 grab	(D)	1	1
Cyanide, Total (EPA 335.3)	8 grab	(D)	1	1	4 grab	(D)	1	1
Purgeable Organics (EPA 624)	8 grab	1	1	1	4 grab	1	1	1
Residue, Filterable (EPA 160.1)	8 composite	(D)	1	(E)	4 composite	(D)	1	(E)
Residue, Non-Filterable (EPA 160.2)	8 composite	(D)	1	(E)	4 composite	(D)	1	(E)
Biochemical Oxygen Demand (EPA 405.1)	8 composite	(D)	1	(E)	4 composite	(D)	1	(E)
Total Metals (Col,Cr,Cu,Ni,Ag,Zn) By ICP (EPA 200.7)	8 composite	(D)	1	1	4 composite	(D)	1	1
Total Lead By Furnace AA (EPA 239.2)	8 composite	(D)	1	1	4 composite	(D)	1	1
Fecal Coliform (SM9222-D)	8 composite	(D)	1	(E)	(This lab method was not applied to the samples collected during this rain event)			
Fecal Coliform (SM9221-C)	(This lab method was not applied to the samples collected during this rain event)				4 composite	(D)	1	(E)

H:\AA002\SAMPLE\T-2-1.WW2

TABLE 2.1 (Continued)

NUMBERS OF WATER SAMPLES FOR CHEMICAL ANALYSIS
NOVEMBER-DECEMBER 1993 STORM WATER SAMPLING EFFORT
ROBINS AFB, GEORGIA

Analytical Method	November 5, 1993 Rain Event				December 4, 1993 Rain Event			
	Number of Environmental Samples	Number of Trip Blanks(A)	Number of Field Duplicate Samples(B)	Number of Env. Samples Used as MS/MSD Samples(C)	Number of Env. Samples	Number of Trip Blanks(A)	Number of Field Duplicate Samples(B)	Number of Env. Samples Used as MS/MSD Samples(C)
Fluoride (EPA 340.2)	8 composite	(D)	1	1	4 composite	(D)	1	1
Residual Chloride (SM408A)	8 composite	(D)	1	(E)	(This lab method was not applied to the samples collected during this rain event)			
Nitrogen, Ammonia (EPA 350.1)	8 composite	(D)	1	1	4 composite	(D)	1	1
Nitrogen, Kjeldahl, Total (EPA 351.2)	8 composite	(D)	1	1	4 composite	(D)	1	1
Nitrogen, Nitrate-Nitrite (EPA353.2)	8 composite	(D)	1	1	4 composite	(D)	1	1
Nitrogen, Organics (EPA 351.2/EPA 350.1)	8 composite	(D)	1	(E)	4 composite	(D)	1	(E)
Phosphorus, Total (EPA 365.4)	8 composite	(D)	1	1	4 composite	(D)	1	1
Chemical Oxygen General (EPA 410.2)	8 composite	(D)	1	(E)	4 composite	(D)	1	(E)
Phenolics, Total Recoverable (EPA 420.2)	8 composite	(D)	1	1	4 composite	(D)	1	1
Organochlorine Pesticides and PCBs (EPA 608)	8 composite	(D)	1	1	4 composite	(D)	1	1

TABLE 2.1 (Continued)

NUMBERS OF WATER SAMPLES FOR CHEMICAL ANALYSIS
NOVEMBER-DECEMBER 1993 STORM WATER SAMPLING EFFORT
ROBINS AFB, GEORGIA

Analytical Method	November 5, 1993 Rain Event				December 4, 1993 Rain Event			
	Number of Environmental Samples	Number of Trip Blanks[(A)]	Number of Field Duplicate Samples[(B)]	Number of Env. Samples Used as MS/MSD Samples[(C)]	Number of Env. Samples	Number of Trip Blanks[(A)]	Number of Field Duplicate Samples[(B)]	Number of Env. Samples Used as MS/MSD Samples[(C)]
Polynuclear Aromatic Hydrocarbons (EPA 610)	8 composite	(D)	1	1	4 composite	(D)	1	1
Base/Neutrals and Acids (EPA 625)	8 composite	(D)	1	1	4 composite	(D)	1	1

(A) Trip blanks were included with every shipping cooler that contained samples to be analyzed for purgeable organics by Method EPA 624.

(B) Field duplicate samples were collected at a frequency of 10 percent per analytical method per rain event , i.e., one field duplicate for every 10 environmental samples, per analytical method, per rain event.

(C) This column shows the number of environmental samples chosen to also serve as MS/MSD samples. MS/MSD samples were collected at a frequency of 5 percent per applicable analytical method per rain event, i.e., one MS/MSD sample for every 20 environmental samples, per applicable analytical method, per rain event. The collecting of MS/MSD samples involved collecting triple the sample volume required for a regular sample (for all methods of analysis).

(D) No trip blanks were required for these analytical methods.

(E) No MS/MSD samples were collected for these analytical methods.

Sample containers for all analytical methods conducted at the laboratory were provided by the laboratory. Each sample container contained the chemical preservative appropriate to the analytical method assigned to that container when received from the laboratory. Table 2.2 lists the kinds of sample containers used, the methods of preservation, and the holding times for the laboratory analytical methods that were used during the sampling effort.

2.2.1 Decontamination Supplies

Certain sampling equipment (namely, the 1-L sampling jars, the sampling booms, the 10-L composite sample jars, and the tubing assemblies and stoppers attached to the 10-L composite sample jars) required rigorous decontamination before the sampling events. Because many of the items were reused for the December 4 rain event, they required a second decontamination before their reuse. The supplies that were needed for decontamination included:

- laboratory-grade detergent (e.g., Liquinox®);
- deionized water;
- high purity methanol (e.g., Fisher Scientific Optima-grade);
- high purity organic-free water (e.g., Fisher Scientific HPLC-grade);
- plastic bags and plastic wrap to contain decontaminated equipment; and
- nonpermeable gloves.

2.2.2 Other Supplies

Other supplies associated with the sampling effort included:

- wooden tables for sampling locations where flat ground surfaces were not available for placing sample jars and containers;
- plastic sheet upon which sampling equipment was placed when not in immediate use;
- ice for preserving composite and grab samples;
- cardboard boxes and plastic bags for containing each 10-L composite sample jar within a bed of ice;
- trip blanks (provided by the laboratory - for analytical Method EPA 624);
- nonpermeable gloves;
- headlamps and flashlights for nighttime sampling;
- raincoats and rain pants; and
- waterproof boots and waders.

TABLE 2.2

SUMMARY OF SAMPLE PRESERVATION METHODS, SAMPLE CONTAINERS, REQUIRED SAMPLE VOLUMES, AND HOLDING TIMES NOVEMBER-DECEMBER, 1993 STORM WATER SAMPLING EFFORT ROBINS AFB, GEORGIA

Analytical Method	Preservation Method[(A)]	Number of Sample Containers, Sample Volumes, and Type of Sample Container[(B)]	Holding Time[(C)]
pH (EPA 150.1)	Cool to 4°C.	One - 100 ml plastic jar	Analyze immediately
Oil and Grease, Total Recoverable (EPA 413.2)	H_2SO_4 to pH <2; Cool to 4°C.	Two - 500 ml amber glass jars	28 days
Cyanide, Total (EPA 335.3)	NaOH to pH >12; Cool to 4°C.	One - 500 ml plastic jar	14 days
Purgeable Organics (EPA 624)	HCl to pH = 2; Cool to 4°C.	Three - 40 ml glass vials	14 days
Residue, Filterable (EPA 160.1)	Cool to 4°C.	One - 1L plastic jar	7 days
Residue, Non-Filterable (EPA 160.2)	Cool to 4°C.	Use same containers as for Residue, Filterable (EPA 160.1)	7 days
Biochemical Oxygen Demand (EPA 405.1)	Cool to 4°C.	Use same container as for Residue, Filterable (EPA 160.1)	48 hours
Total Metals (Cd,Cr,Cu,Ni,Ag,Zn) By ICP (EPA 200.7)	HNO_3 to pH <2; Cool to 4°C.	One - 250 ml plastic jar	6 months
Total Lead By Furnace AA (EPA 239.2)	HNO_3 to pH <2; Cool to 4°C.	Use same container as for Total Metals (Cd,Cr,Cu,Ni,Ag,Zn) By ICP (EPA 200.7)	6 months
Fecal Coliform (SM9222-D)	Sodium Thiosulfate; Cool to 4°C.	One - 250 ml Nalgene jar	30 hours[(D)]
Fecal Coliform (SM9221-C)	Sodium Thiosulfate; Cool to 4°C.	One - 250 ml Nalgene jar	30 hours[(D)]

TABLE 2.2 (Continued)

SUMMARY OF SAMPLE PRESERVATION METHODS, SAMPLE CONTAINERS, REQUIRED SAMPLE VOLUMES, AND HOLDING TIMES NOVEMBER-DECEMBER, 1993 STORM WATER SAMPLING EFFORT ROBINS AFB, GEORGIA

Analytical Method	Preservation Method(A)	Number of Sample Containers, Sample Volumes, and Type of Sample Container(B)	Holding Time(C)
Fluoride (EPA 340.2)	Cool to 4°C.	One - 100 ml plastic jar	28 days
Residual Chloride (SM408A)	Cool to 4°C.	Use same container as for Fluoride (EPA 340.2)	Analyze immediately
Nitrogen, Ammonia (EPA 350.1)	H_2SO_4 to pH <2; Cool to 4°C.	One - 250 ml plastic jar	28 days
Nitrogen, Kjeldahl, Total (EPA 351.2)	H_2SO_4 to pH <2; Cool to 4°C.	Use same container as for Nitrogen, Ammonia (EPA 350.1)	28 days
Nitrogen, Nitrate-Nitrite (EPA 353.2)	H_2SO_4 to pH <2; Cool to 4°C.	Use same container as for Nitrogen, Ammonia (EPA 350.1)	28 days
Nitrogen, Organic (EPA 351.2/EPA350.1)	H_2SO_4 to pH <2; Cool to 4°C.	Use same container as for Nitrogen, Ammonia (EPA 350.1)	28 days
Phosphorus, Total (EPA 365.4)	H_2SO_4 to pH <2; Cool to 4°C.	Use same container as for Nitrogen, Ammonia (EPA 350.1)	28 days
Chemical Oxygen Demand (EPA 410.2)	H_2SO_4 to pH <2; Cool to 4°C.	One - 100 ml plastic jar	28 days
Phenolics, Total Recoverable (EPA 420.2)	H_2SO_4 to pH <2; Cool to 4°C.	One - 125 ml amber glass jar	28 days
Organochlorine Pesticides and PCBs (EPA 608)	Cool to 4°C.	One - 1L amber glass jar	Extract within 7 days of collection; analyze within 40 days of extraction
Polynuclear Aromatic Hydrocarbons (EPA 610)	Cool to 4°C.	One - 1L amber glass jar	Extract within 7 days of collection; analyze within 40 days of extraction

TABLE 2.2 (Continued)

SUMMARY OF SAMPLE PRESERVATION METHODS, SAMPLE CONTAINERS, REQUIRED SAMPLE VOLUMES, AND HOLDING TIMES NOVEMBER-DECEMBER, 1993 STORM WATER SAMPLING EFFORT ROBINS AFB, GEORGIA

Analytical Method	Preservation Method(A)	Number of Sample Containers, Sample Volumes, and Type of Sample Container(B)	Holding Time(C)
Base/Neutrals and Acids (EPA 625)	Cool to 4°C.	Two - 1L amber glass jar	Extract within 7 days of collection; analyze within 40 days of extraction

(A) Sample preservation for grab samples was performed immediately upon sample collection. For the composite samples, sample preservation was performed at the time that aliquots of the composite sample were poured into each sample container; this occurred after composite sample was completed.

(B) Sample volumes do not include the additional volumes that were required for MS/MSD samples.

(C) All holding times were determined from the date and time of sample collection.

(D) The true holding time for fecal coliform analysis is 6 hours. However, since meeting this holding time is considered impractical for the laboratory analysis of most field environmental samples, fecal coliform analytical data is considered acceptable for samples analyzed within 30 hours of sample collection.

Supplies used during the sample packaging portion of the sampling effort included:

- temperature blanks (provided by the laboratory - for placement in shipping coolers);
- Teflon® and plastic tapes for wrapping sample containers;
- polynet and bubble plastic to protect glass sample containers;
- plastic zip-lock bags for enclosing sample containers and ice;
- plastic bags for lining shipping coolers;
- ice for cooling sample containers;
- shipping coolers and cardboard boxes to contain coolers (provided by the laboratory);
- chain-of-custody forms;
- custody seals for shipping; and
- clear plastic tape for sealing shipping boxes.

2.2.3 Field Test Kit For Free and Total Chlorine

The field test kit for free and total chlorine was a Hach® Model CN-66T test kit. This kit contained all the supplies required to conduct this test. The test enabled the field personnel to measure free and total chlorine in water samples. As indicated earlier in this report, this field test was applied to the four composite samples that were collected during the December 4 rain event.

2.2.4 Rain Gauge

A portable rain gauge with 0.1 inch divisions was used for measuring the amount of rainfall which accumulated during each of the two rain events. Before each of the two rain events, the empty rain gauge was placed vertically on the open ground near a selected sampling location and allowed to collect precipitation.

2.3 DECONTAMINATION PROCEDURES

As described in Section 2.2.1 of this report, certain sampling equipment required rigorous decontamination before use or reuse. These items included the 1-L sampling jars, the sampling booms, the 10-L composite sample jars, and the tubing assemblies and Teflon®-wrapped rubber stoppers that were attached to the 10-L composite sample jars. This section describes the procedures that were used to decontaminate this equipment before the sampling effort.

Nonpermeable gloves were worn by the field personnel during all decontamination procedures. The general procedure for decontaminating the sampling equipment was as follows:

1. Clean equipment with tap water and laboratory-grade detergent, using a brush if necessary to remove particulate matter and surface films.
2. Rinse equipment thoroughly with tap water.
3. Rinse equipment thoroughly with deionized water.
4. Rinse equipment twice with methanol.
5. Rinse equipment thoroughly with organics-free (HPLC-grade) water and allow the equipment to air dry.
6. Place equipment in plastic bags for storage until used during sampling operations.

A few deviations from the general decontamination procedure should be noted. During some decontamination operations, the methanol rinse consisted of simply rinsing the equipment once thoroughly with methanol. While this method of rinsing did not follow the requirement given above of rinsing the equipment twice with methanol, it is considered acceptable. In addition, during the decontamination operations of the sampling equipment that was used for the November 5 rain event, deionized water was not available. Therefore, the deionized water rinse step of the general decontamination procedure given above was not carried out. The deionized water rinse step was carried out during decontamination operations of the sampling equipment that was used for the December 4 rain event.

Another deviation from the general decontamination procedure should also be noted. For the 10-L composite sample jars that were used during the November 5 rain event, the final organic-free (HPLC-grade) water rinse was performed on the jars after the tubing assemblies had been attached to the nipples of the jars. (These tubing assemblies had already been completely decontaminated before its attachment to the jars.) Detergent or other residue remaining in the composite sample jars before this final rinse may have been deposited in the tubing assemblies during the rinse. Therefore, the tubing assemblies may have become contaminated with detergent or other residues.

To remedy this potential source of contamination for the composite samples, the sampling personnel were instructed to rinse each composite sample jar with a single 1-L sample aliquot immediately before adding the first true aliquot of composite sample to composite sample jar. This rinse was performed at the start of the sampling operations conducted during the November 5 rain event. There was no risk of contaminating these tubing assemblies with detergent or other residues for the December 4 rain event because the 10-L composite sample jars were final rinsed during decontamination activities with organic-free (HPLC-grade) water before the tubing assemblies were attached to the nipples of the jars. Therefore, the sample rinse of the composite jars and their tubing assemblies conducted in the field during the November 5 rain event was not required during the December 4 rain event.

Several other details about the decontamination procedures of certain items should be mentioned. When decontaminating the sampling booms, only the ends of the booms to which the 1-L sampling jars were attached were decontaminated. Before the

November 5 rain event, the rubber stoppers were decontaminated as described earlier in this section. They were then dried with paper towels, and wrapped in Teflon® tape until their surfaces were completely covered. The Teflon® tape was used to prevent the rubber from potentially contaminating the composite samples when the stoppers were placed over the openings of the 10-L composite sample jars during sampling. During the period between the November 5 rain event and the December 4 rain event, these rubber stoppers were decontaminated again. The old Teflon® tape was removed and discarded, the stoppers were decontaminated as described earlier in this section, and new Teflon® tape was used to rewrap the stoppers. These stoppers were then used during the December 4 rain event.

Finally, before the November 5 rain event, the tubing assemblies were decontaminated in the following way. The disassembled pieces of each tubing assembly were decontaminated as described earlier in this section. These pieces consisted of lengths of Tygon® and Teflon® tubing. After decontamination, the pieces of tubing were assembled using Teflon® tape as a sealing material at the interfaces between the Tygon® and Teflon® tubing pieces. During the period between the November 5 rain event and the December 4 rain event, these tubing assemblies were decontaminated again. The tubing assemblies were completely disassembled, and the old Teflon® tape was removed and discarded. The pieces of Tygon® and Teflon® tubing were then decontaminated as described earlier in this section, and were reassembled using new Teflon® tape as a sealing material at the interfaces of the Tygon® and Teflon® tubing pieces. These tubing assemblies were then used during the December 4 rain event.

The field test kit for measuring free and total chlorine required minimal decontamination. Before adding a water sample to the test kit sample tubes, these sample tubes were rinsed with tap water and dried with a towel.

The rain gauge required no decontamination during the sampling effort.

SECTION 3
SAMPLING EVENTS

This section describes the conditions of each of the two rain events, the associated sampling data and the sampling procedures employed.

3.1 DESCRIPTION OF RAINFALL EVENTS

Table 3.1 provides information concerning the two rainfall events. This table indicates that each of the two rain events during which sampling occurred achieved the 0.1 inch rain accumulation requirement as given earlier in this report (Section 1.1). In addition, the two rain events occurred beyond the 72-hour minimum duration for the time between each rain event and the previous measurable rain event. Finally, it should be noted that, for the November 5 rain event, field personnel indicated that a mist-like precipitation began at some time prior to midnight on November 4th. The rain event start time given in Table 3.1 for this particular rain event, however, indicates the approximate time when the mist progressed into a steady rain.

3.2 SAMPLE COLLECTION INTERVALS

Table 3.2 provides sampling times and other related data for the sampling effort. The data in this table addresses specific criteria for the collecting of grab samples and composite samples (as given in Section 1.1 of the report). As indicated in Table 3.2, sampling began at a location after flow was observed at the location. While it was difficult for sampling personnel assigned to more than one sampling location to monitor the exact time when flow began at each sampling location, the sampling personnel were able to satisfy the requirement that all grab samples be collected during the first 30 minutes of the discharge.

Two of the requirements for the collecting of composite samples are as follows: (1) composite samples must be accumulated from each sampling location at a minimum rate of 3 discrete sample aliquots per hour and (2) the discrete sample aliquots must be separated in time from one another by a minimum of 15 minutes. The project team followed these requirements during sampling, and collected sample aliquots for the composite samples at equal time intervals of approximately 20 minutes during the compositing period.

The sampling times for the composite sample aliquots given in Table 3.2 for each sampling location show that all sample aliquots were spaced in time at intervals of at least 15 minutes. Most of the composite sampling intervals varied between 20-25 minutes in duration; some composite sampling intervals were as low as the minimum 15 minute duration.

TABLE 3.1

RAIN EVENT DATA FOR THE NOVEMBER-DECEMBER 1993 STORM WATER SAMPLING EFFORT ROBINS AFB, GEORGIA

	November 5th, 1993 Rain Event	December 4th, 1993 Rain Event
Date/time of the end of the previous measurable rain event.	October 30, 1993 at 2:00 P.M.	November 27, 1993 at 10:00 A.M.
Time duration between previous measurable rain event and the rain event.	130 hr.	178.25 hr.
Rain event start date/time.	November 5, 1993, near 12:00 midnight	December 4, 1993 at 8:15 P.M.
Rain event stop date/time.	November 5, 1993 at 3:01 A.M.	December 4, 1993 at 9:45 P.M.
Rain event duration.	3 hr.	1.5 hr.
Location of rain gauge during rain event.	Sampling Location 4	Sampling Location 10
Total rainfall amount during rain event, as measured with rain gauge.	0.5 in.	0.45 in.
Estimates of total volumes of discharges through drainage area.	Sampling location 1: 350,000 gal 2: 124,000 gal 3: 5,283,000 gal 4: 460,000 gal 5: 810,000 gal 6: 2,082,000 gal 7: 14,500 gal 8: 2,490,000 gal	Sampling Location 9: 1,482,000 gal 10: 4,200,000 gal 11: 3,372,000 gal 12: 115,000 gal

TABLE 3.2

SAMPLING TIMES AND OTHER DATA FOR THE NOVEMBER-DECEMBER 1993
STORM WATER SAMPLING EFFORT
ROBINS AFB, GEORGIA

	Sampling Locations, November 5, 1993 Rain Event								Sampling Locations, December 4, 1993 Rain Event			
	1	2	3	4	5	6	7	8	9	10	11	12
Name of sampling personnel at each sampling location	Geoffrey Albert	Geoffrey Albert	Alan Bollinger	Alan Bollinger	Alan Bollinger	Erich Stedman	Erich Stedman	Brian Jeter	Alan Bollinger	Alan Bollinger	Geoffrey Albert	Alan Bollinger
Criteria used to determine when to begin sampling at each sampling location.	All sampling locations: after flow was observed at the discharge of a sampling location, sample collection was started.											
Criteria used to determine when to end sampling at each sampling location	For the sampling locations sampled during the November 5, 1993 rain event: the duration of the rain event was approximately 3 hr. Hence, sampling at each sampling location was stopped approximately 3 hr after sampling began.								For the sampling locations sampled during the December 4, 1993 rain event: the duration of this rain event was only 1.5 hr. Hence, sampling at each sampling location was stopped near the end of the rain event.			
Sampling location where field duplicate (FD) samples were collected						FD				FD		
Sampling location where MS/MSD samples were collected						MS/MSD				MS/MSD		

TABLE 3.2 (Continued)

SAMPLING TIMES AND OTHER DATA FOR THE NOVEMBER-DECEMBER 1993
STORM WATER SAMPLING EFFORT
ROBINS AFB, GEORGIA

	Sampling Locations, November 5, 1993 Rain Event								Sampling Locations, December 4, 1993 Rain Event			
	1	2	3	4	5	6	7	8	9	10	11	12
Sampling date at each sampling location	11/5/93	11/5/93	11/5/93	11/5/93	11/5/93	11/5/93	11/5/93	11/5/93	12/4/93	12/4/93	12/4/93	12/4/93
Sampling time for the grab sample collected at each sampling location	12:00 A.M.	12:30 A.M.	1:00 A.M.	12:48 A.M.	12:35 A.M.	12:15 A.M.	12:50 A.M.	1:05 A.M - 1:20 A.M.	8:45 P.M.	8:55 P.M.	8:45 P.M.	8:30 P.M.
Sampling times for the composite sample aliquots collected at each sampling location.	12:20 A.M.	12:50 A.M.	1:00 A.M.	12:48 A.M.	12:35 A.M.	12:45 A.M.	1:00 A.M.	1:21 A.M.	8:50 P.M.	9:15 P.M.	8:55 P.M.	8:40 P.M.
	12:40 A.M.	1:10 A.M.	1:21 A.M.	1:10 A.M.	1:05 A.M.	1:10 A.M.	1:20 A.M.	1:41 A.M.	9:30 P.M.	9:35 P.M.	9:10 P.M.	9:25 P.M.
	1:00 A.M.	1:30 A.M.	1:41 A.M.	1:32 A.M.	1:25 A.M.	1:30 A.M.	1:40 A.M.	2:01 A.M.	9:50 P.M.	9:55 P.M.	9:25 P.M.	9:45 P.M.
	1:20 A.M.	1:50 A.M.	2:02 A.M.	1:53 A.M.	1:45 A.M.	1:50 A.M.	2:00 A.M.	2:21 A.M.	10:10 P.M.	10:15 P.M.	9:40 P.M.	10:05 P.M.
	1:40 A.M.	2:10 A.M.	2:25 A.M.	2:15 A.M.	2:10 A.M.	2:10 A.M.	2:20 A.M.	2:41 A.M.				
	2:00 A.M.	2:30 A.M.	2:45 A.M.	2:37 A.M.	2:32 A.M.	2:30 A.M.	2:40 A.M.	3:01 A.M.				

TABLE 3.2 (Continued)

SAMPLING TIMES AND OTHER DATA FOR THE NOVEMBER-DECEMBER 1993
STORM WATER SAMPLING EFFORT
ROBINS AFB, GEORGIA

	Sampling Locations, November 5, 1993 Rain Event								Sampling Locations, December 4, 1993 Rain Event			
	1	2	3	4	5	6	7	8	9	10	11	12
	2:20 A.M.	2:50 A.M.	3:05 A.M.	3:00 A.M.	2:55 A.M.	2:50 A.M.	3:00 A.M.	3:21 A.M.				
	2:40 A.M.	3:10 A.M.	3:25 A.M.	3:21 A.M.	3:15 A.M.	3:10 A.M.	3:20 A.M.	3:41 A.M.				
	3:00 A.M.	3:30 A.M.	3:45 A.M.	3:41 A.M.	3:35 A.M.	3:30 A.M.	3:40 A.M.	4:01 A.M.				
Total duration from the beginning to the end of the collecting of composite sample aliquots at each sampling location.	2 hr, 40 min	2 hr, 40 min	2 hr, 45 min	2 hr, 53 min	3 hr, 0 min	2 hr, 45 min	2 hr, 40 min	2 hr, 40 min	1 hour, 20 min	1 hour, 0 min	0 hour, 45 min	1 hour, 25 min
Total duration from the collection of the first (grab) sample to the end of the collecting of composite sample aliquots at each sampling location.	3 hr, 0 min	3 hr, 0 min	2 hr, 45 min	2 hr, 53 min	3 hr, 0 min	3 hr, 15 min	2 hr, 50 min	2 hr, 56 min	1 hour, 25 min	1 hour, 20 min	0 hr, 55 min	1 hour, 35 min

A small number of composite sampling intervals were somewhat higher, varying from 30-45 minutes in duration (observe in Table 3.2 the time intervals between the 1st and 2nd composite sample aliquots taken from Sampling Locations 5, 6, 9, and 12). Furthermore, taking three hours as the approximate duration of the composite sampling period, and nine composite sample aliquots as the number of aliquots collected at each sampling location during the November 5 rain event, calculation shows that approximately three sample aliquots were collected per hour during this rain event. In the same way, taking 1.5 hours as a rough approximation of the duration of the composite sampling period, and four composite sample aliquots as the number of aliquots collected at each sampling location during the December 4 rain event, calculation shows that roughly three sample aliquots were collected per hour during this rain event. Hence, with some minor exceptions, the composite sample aliquots collected at each sampling location during both the November 5 rain event and the December 4 rain event were collected according to the requirements given above and in Section 1.1 of this report.

With respect to the required duration of the composite sampling period, composite sample aliquots were collected during either the first three hours of discharge or for the entire discharge (for the rain event less than three hours). The November 5 rain event lasted approximately three hours. For this rain event, the sampling personnel collected composite sample aliquots at each sampling location for a period of approximately 3 hours starting from a time soon after flow was observed at the discharge of the sampling location. The December 4 rain event, however, lasted only approximately 1.5 hours. For this rain event, the sampling personnel collected composite sample aliquots at each sampling location for a period of time starting from a time soon after flow was observed at the discharge of the sampling location until the rain stopped falling.

For the November 5 rain event, the composite sample aliquots collected at each of the eight sample locations were all of the same volume, specifically, 1-L. For the December 4 rain event, fewer composite sample aliquots were collected than during the November 5 rain event because this second rain event was shorter. In order to collect a sufficient total quantity of composite sample to fill all of the sample containers for the required laboratory analyses, a larger volume of sample was collected for each composite sample aliquot during the December 4 rain event. A set of four composite sample aliquots were collected for each 10-L composite sample jar during the December 4 rain event. For each of these set of four composite sample aliquots, three aliquots had a volume of 2 L, and one aliquot had a volume of 3 L. The additional liter of sample added to the volume of one of the four composite sample aliquots was a result of an effort to ensure that sufficient volume had been collected to fill all of the required sample containers.

3.3 SAMPLING PROCEDURES

This section describes the specific sampling procedures that were used during the sampling effort. There are some differences between the procedures used during the November 5 rain event and those used during the December 4 rain event. These differences will be described in this section.

3.3.1 Mobilization to Sampling Locations and Set-Up

The sampling personnel mobilized to their respective sampling locations by vehicle where possible; however, some sampling locations could only be reached by foot. Vehicles were preferred as a means of providing dry cover for the sampling equipment during the rain event. The sampling equipment that was required at each sampling location included the items discussed in the following paragraphs.

One 1-L, wide-mouth, glass sampling jar with an attached metal wire handle was assigned to each sampling location during the two rain events. Plastic sampling booms were also assigned to those sampling locations where the booms were needed to assist in sample collection.

Also, delivered to each sampling location was a portable styrofoam cooler which contained a complete set of the lab-furnished (pre-preserved) sample containers that were required for collecting the grab sample (see Table 2.2 for a listing of these containers). Each cooler also contained enough ice to keep the grab samples cold during the sampling period. Note that at those sample locations where field duplicate samples and MS/MSD samples were collected, additional sets of grab sample containers were required (one additional set for a field duplicate sample and two additional sets for MS/MSD samples).

A 10-L glass composite sample jar, with a flexible tubing assembly attached to the jar's nipple and a Teflon®-wrapped rubber stopper covering the jar's top opening, was also brought to each sampling location. Each 10-L composite sample jar was placed inside of a plastic-lined cardboard box filled with ice, such that the composite sample would be kept cold over the course of the composite sampling period. Note that at those sample locations where field duplicate samples and MS/MSD samples were collected, additional 10-L composite sample jars were required (one additional 10-L composite sample jar for a field duplicate sample and two additional 10-L composite sample jars for MS/MSD samples).

Other support equipment and supplies were also brought to each sampling location during each of the two rain events. These supplies are described in Section 2.2.

3.3.2 General Procedures

All samples were collected manually. Nonpermeable disposable gloves were worn during all sampling operations where the handling of the sampling equipment or the samples was involved. Prior to the collection of each composite sample aliquot at a sampling location, the sampler removed his old gloves and put on new gloves. Also, if a sampler was assigned to collect samples at more than one location, the sampler removed his old gloves and put on a new gloves prior to going from one sampling location to the next.

At each sampling location, the 1-L jar was used to collect samples from the storm water discharge and disperse the samples to the grab sample containers and the 10-L composite sample jars. If the storm water discharge of the sampling location was within

physical reach for the sampler, volumes of samples were drawn from the discharge by holding the 1-L jar by the hand and dipping the jar into the discharge. However, in the event that the storm water discharge of the sampling location was beyond physical reach for the sampler, the 1-L jar was attached by its wire handle to the end of a plastic sampling boom. This sampling boom was used to dip the sampling jar into the storm water discharge and collect a volume of sample.

The 1-L sampling jar assigned to each sampling location was thoroughly rinsed in the sample location's storm water discharge prior to collecting the grab sample and prior to the collecting of each composite sample aliquot. The 1-L sampling jars were not decontaminated between the collecting of the grab samples and the composite samples or between the collecting of successive composite sample aliquots during a rain event. However, the 1-L sampling jars were laid on plastic in between the collecting of grab samples and composite samples and in between the collecting of successive composite sample aliquots during each rain event. This effort was made to ensure the 1-L sampling jar was not contaminated during the sampling operations.

During sampling, collection of a volume of sample in the 1-L sampling jar was made by pointing the opening of the 1-L sampling jar upstream. If a sampling boom was used, the boom was held out of the flow of the discharge. By using these techniques, contact between the outside of the 1-L sampling jar and the collected sample and between the sampling boom and the collected samples was minimized. These practices reduced the possibility of contamination of the collected sample volumes as a result of the sampling operations.

3.3.3 Grab Samples

For grab samples, once a sample volume was drawn from the storm water discharge, the sample volume was dispensed from the jar into the appropriate grab sample containers. More than one filled 1-L sampling jar was required to completely fill all of the grab sample containers for a single sample. Care was exercised in not overfilling the sample containers. Overfilling leads to the loss of the chemical preservatives contained in the sample containers. Once filled, the grab sample containers were immediately placed in the cooler containing ice to be kept cool.

3.3.4 Composite Samples

The 1-L sampling jar was used to collect composite sample aliquots from the storm water discharge and to dispense aliquots into the 10-L glass composite sample jars. Composite sample aliquots were collected at time intervals of roughly 20 minutes. During composite sampling, the 10-L composite sample jars were kept inside a plastic-lined cardboard box filled with ice to keep the composite samples cold during the compositing period. The Teflon-lined rubber stopper assigned to each 10-L composite sample jar was kept over the top opening of the 10-L composite sample jar when the jar was not being filled with a sample. This was done as a precaution to prevent rain or contamination from entering the 10-L composite sample jar.

Once the process of filling the 10-L composite sampling jar was completed, the jar was transported within its ice pack back to the field office. At the office, the composite sample contained within each 10-L composite sample jar was dispensed into composite sample containers. These composite sample containers were also provided by the lab. (See Table 2.2 for a listing of these containers.)

Just prior to dispensing samples from a 10-L composite sample jar into the composite sample containers, the 10-L composite sample jar was swirled or shaken in order to thoroughly mix the sample. Once this was done, the tubing assembly attached to the lower nipple opening of the 10-L composite sample jar was opened to dispense the sample into the composite sample containers. When filling the composite sample containers, care was again exercised not to overfill. Once filled, the composite sample containers were immediately placed in coolers containing ice to be kept cold.

3.3.5 Field Duplicate Samples

One field duplicate sample was collected during each of the two rain events. During the collecting of field duplicate samples, the original sample and its field duplicate were treated as separate, individual samples. For grab samples, two sets of grab sample containers were brought to the sampling location selected for the collection of the field duplicate sample. One set was utilized for the original sample and one set was used for its field duplicate. The two sets of grab sample containers were filled with sample in the following way. All of the grab sample containers which corresponded to a particular grab sample analytical method were filled all at once; one sample container was completely filled prior to proceeding to fill the next one. Once all of the sample containers for that analytical method were filled, the sample containers corresponding to the remaining grab sample analytical methods were filled one at a time in the same way, until all of the grab sample containers were filled.

For the composite samples, two 10-L composite sample jars were brought to the sampling location chosen for the collection of the field duplicate sample. One jar was utilized for the original sample and one jar was used for its field duplicate. When collecting the composite sample aliquots for these two jars, each of the two 10-L composite sample jars was filled with separate volumes of sample (the 1-L sampling jar was used to dispense a complete composite sample aliquot into one of the 10-L composite sample jars, and then the 1-L sampling jar was used to dispense a complete composite sample aliquot into the second 10-L composite sample jar).

The field duplicate samples collected during the sampling efforts were assigned coded sample names so that the laboratory could not identify the original sample that corresponded to each field duplicate sample. During the November 5 rain event, grab sample RAFB-SL16-G-E1 was the coded field duplicate of grab sample RAFB-SL6-G-E1, and composite sample RAFB-SL16-C-E1 was the coded field duplicate of composite sample RAFB-SL6-C-E1. During the December 4 rain event, grab sample RAFB-SL13-G-E1 was the coded field duplicate of grab sample RAFB-SL10-G-E1, and composite sample RAFB-SL13-C-E1 was the coded field duplicate of composite sample RAFB-SL10-C-E1.

3.3.6 MS/MSD Samples

During the collecting of an MS/MSD sample, the original sample volume, the MS sample volume, and the MSD sample volume were treated as the same identical sample. All three sample volumes corresponding to these samples were collected at the same time and in such a way that all three sample volumes have identical physical and chemical compositions. (If the field duplicate sample and MS/MSD sample are collected from the same sampling location during a rain event, only one original sample volume needs to be collected to serve as the mate to both the field duplicate and the MS/MSD. In other words, only four sample volumes need to be collected: one volume to serve as the original sample, one volume to serve as the field duplicate sample, and two volumes to serve as the MS/MSD sample.)

One MS/MSD sample was collected during each of the two rain events. For grab samples, three sets of grab sample containers were brought to the sampling location chosen for the collection of MS/MSD samples. One set was for the original sample volume and two sets were for the MS/MSD sample volumes. The following procedure was used during the November 5 rain event for dispensing grab sample volumes into these three sets of grab sample containers during the grab sampling operations. During grab sampling, equal portions of the 1-L sampling jar-full were poured into all three sets of sample containers. More specifically, the three sets of sample containers corresponding to each specific laboratory analytical method were filled together using equal portions of the same 1-L volume of sample contained in the 1-L sampling jar (e.g., all nine 40-ml glass vials for the purgeable organics analysis were filled all at once, followed by filling all three 100-ml plastic jars for the pH analysis all at once, etc.) If more than one volume of the 1-L sampling jar was required to fill all three sets of sample containers corresponding to a specific analytical method, each of the two or more 1-L sampling jars-full that were needed were equally apportioned among the sample containers until all containers were filled.

For the December 4 rain event, the three sets of grab sample containers were filled in the following way. All of the grab sample containers for all three sets which corresponded to a particular grab sample analytical method were filled all at once, one sample container being completely filled prior to going on to fill the next one. Once all of the sample containers for that analytical method were filled, the sample containers corresponding to each of the remaining grab sample analytical methods were filled. Because it required more than one 1-L sampling jar-full to completely fill the three sets of grab sample containers corresponding to each of at least two of the grab sample analytical methods, this procedure may have resulted in differences in physical and chemical composition between the sample volumes corresponding to each of the three sets of grab sample containers corresponding to each grab sample analytical method. Hence, for the December 4 rain event, the sample volumes used to make up the two MS/MSD grab samples may not have been physically or chemically identical. In addition, the sample volumes used to make up the grab of the original sample may have differed in physical and chemical composition from the sample volumes used to make up its MS/MSD grab sample pair. Also, for those grab sample analytical methods where more than one grab sample container was required to complete a single sample's set of

containers, differences in physical and chemical composition may have also existed among the individual, discrete sample volumes within each of the three sets (MS, MSD, and original sample sets) of sample containers corresponding to a particular grab sample analytical method. The differences in physical and chemical composition described here, however, are expected to be minimal in that all three sets of grab sample containers were filled with 1-L sampling jars-full of sample that were collected from the sample location's storm water discharge at close to the same time.

For composite samples, three 10-L composite sample jars were brought to the sample location chosen for the collection of the MS/MSD sample. One jar was for the original sample volume and the other two jars were for the MS/MSD sample volumes. The following procedure was used during the November 5 rain event for dispensing composite sample aliquots into these three 10-L composite sample jars during a typical 20-minute composite sampling interval. During composite sampling, once the 1-L sampling jar had been used to collect a 1-L volume of sample from the sampling location's storm water discharge, equal portions of the 1-L sampling jar-full were poured into all three 10-L composite sample jars. More specifically, all three 10-L composite sample jars were filled together using equal portions of the same 1-L volume of sample contained in the 1-L sampling jar. Since each 10-L composite sample jar required at least 1 liter of sample for each of the composite sample aliquots the jar received, more than one volume of the 1-L sampling jar were required to fill the three 10-L composite sample jars with one complete composite sample aliquot each. Each of the three or more 1-L sampling jars-full that were needed were therefore equally apportioned among the three 10-L composite sample jars.

For the December 4 rain event, the following procedure was used for dispensing composite sample aliquots into the three 10-L composite sample jars during a typical 20-minute composite sampling interval. For this rain event, each of the three 10-L composite sample jars was filled with separate 1-L sampling jars-full of sample. Hence, each of the three 10-L composite sample jars contained individual samples which may not have been physically and chemically identical to each other. Later, when dispensing sample from these three 10-L composite sample jars into the sample containers corresponding to the laboratory analytical methods chosen for the composite samples, the sample containers for the original sample and the sample containers for the MS/MSD sample were filled entirely from two of the three 10-L composite sample jars. Because two 10-L composite sample jars (each jar containing an individual composite sample which may not have been physically or chemically identical to the other jar's sample) were used to dispense sample into the sample containers for both the original sample and the MS/MSD sample, the sample volumes used to make up the two MS/MSD composite samples may not have been physically or chemically identical. In addition, the sample volumes used to make up the composite of the original sample may have differed in physical and chemical composition from the sample volumes used to make up its MS/MSD composite sample pair. Also, for those composite sample analytical methods where more than one composite sample container was required to complete a single sample's set of containers, differences in physical and chemical composition may have also existed among the individual, discrete sample volumes within each of the three sets

(MS, MSD, and original sample sets) of sample containers corresponding to a particular composite sample analytical method. The differences in physical and chemical composition described here, however, are expected to be minimal in that all three 10-L composite sample jars were filled with composite sample aliquots that were collected from the sampling location's storm water discharge at close to the same time.

As given in Table 3.2, for the November 5 rain event the MS/MSD sample was collected at Sampling Location 6. For the December 4 rain event, the MS/MSD sample was collected at Sampling Location 10.

3.3.7 Trip Blanks

The trip blanks were only analyzed for purgeable organics (EPA Method 624). This analytical method was applied only to the grab samples collected during this sampling effort. The following procedures were used for handling trip blanks during the sampling operations. While collecting the grab samples during the November 5 rain event, the trip blanks were taken into the field to accompany the grab sample containers used for the purgeable organics analysis. During the December 4 rain event, the trip blanks did not accompany into the field the grab sample containers used for purgeable organics analysis. During both rain events, the trip blanks did accompany the grab sample containers used for purgeable organics analysis during the period prior to mobilization into the field for sampling. And, as required, the trip blanks of each of the two rain events accompanied the sample-filled grab sample containers designated for purgeable organics analysis during the shipment of these sample containers to the laboratory.

3.3.8 Field Notes

During the sampling effort, the sampling personnel recorded various notes during sampling operations, including: sample location number, dates and times for the collection of grab samples and composite sample aliquots, location of portable rain gauge during sampling, rain accumulation during each rain event, beginning and ending times of each rain event, sample locations chosen for the collection of field duplicate samples and MS/MSD samples, coded names for the field duplicate samples, and the volumes of sample collected for each composite sample aliquot.

3.3.9 Other Important Sampling Procedures

Several of the sample containers which were used to store and ship samples to the laboratory required special filling procedures. While most sample containers were filled to nearly full (where some air space, or, headspace was allowed to exist inside the filled containers), some containers had to be completely filled such that little or no headspace remained inside these containers once their caps had been sealed. Sample containers that required complete filling with sample included the sample containers for the following methods of analysis: total recoverable oil and grease (EPA Method 413.2), total recoverable phenolics (EPA Method 420.2), organochlorine pesticides and PCBs (EPA Method 608), polynuclear aromatic hydrocarbons (EPA Method 610), and base/neutrals and acids (EPA Method 625). In addition, the 40-mL vials used to collect grab samples

for the purgeable organics analysis (EPA Method 624) were required to be filled up completely such that no air bubbles existed inside of the filled vials once their caps had been sealed.

Once the grab sample containers had been transported back to the field office from the sampling locations and the composite sample containers had been filled from their 10-L composite sample jars, sample container lids were sealed with either plastic adhesive tape or with Teflon® tape. The Teflon® tape was used to wrap the seals of those sample containers associated with the following analytical methods: purgeable organics (EPA Method 624), total recoverable oil and grease (EPA Method 413.2), total recoverable phenolics (EPA Method 420.2), organochlorine pesticides and PCBs (EPA Method 608), polynuclear aromatic hydrocarbons (EPA Method 610), and base/neutrals and acids (EPA Method 625). The lids for the sample containers for all other analytical methods were wrapped with plastic adhesive tape.

3.3.10 Sample Documentation and Packaging Procedures

In addition to the field notes that were recorded during the sampling operations, other documentation was recorded for samples to be properly identified and to maintain proper chain of custody over the samples. Each grab sample that was collected from a particular sample location was given a unique sample designation such that it could be easily distinguished from all other samples. In the same way, each composite sample that was collected from a particular sample location was also given a unique sample designation. The sample designation scheme used for both grab samples and composite samples during the sampling effort was as follows:

RAFB	-	Sample Location Number	-	Sample Type Identifier	-	Sampling Effort Number

where RAFB stood for Robins Air Force Base; the sample location number indicated from which sample location the sample was collected; the sample type identifier indicated whether the sample was a grab (G) sample or a composite (C) sample; and the sampling effort number indicated the sampling effort during which the sample was collected (for the sampling effort the sampling effort number was E1). Examples of sample designations used during the sampling effort are as follows:

RAFB-SL3-C-E1.	This sample designation identifies a composite sample collected from Sample Location 3 at RAFB during the sampling effort.
RAFB-SL12-G-E1	This sample designation identifies a grab sample collected from Sample Location 12 at RAFB during the sampling effort.

The field duplicate samples collected during the sampling effort were given coded sample designations. These coded sample designations followed the scheme given in the previous paragraph; the coded sample designations for these field duplicate samples and the sample locations from which they were collected are given in Section 3.3.5 of this report. MS/MSD samples were designated using the sample designation scheme given in the previous paragraph; however, on the MS/MSD sample container labels and on their corresponding chain-of-custody forms, the designation "MS/MSD" was written such that these sample containers could be identified as the MS/MSD samples. Trip blank samples were given special designations. The trip blank used during the November 5 rain event was designated RAFB-TB-1-G-E1. The trip blank used during the December 4 rain event was designated RAFB-TB2.

All grab sample containers and all composite sample containers had labels attached to them which enabled the following information to be recorded upon them: sample designation, sample collection date and time(s), name of sampling personnel, name of the analytical method to which the sample container is assigned, and the chemical preservative used. Once each sample container label was filled out, it was covered over in clear plastic tape such that the writing on the label would not smear or run.

Chain-of-custody (COC) forms were filled out for all grab sample containers and composite sample containers prior to the shipment of these containers to the laboratory. A COC form was filled out to record the contents of each shipping cooler that was shipped to the laboratory. Within each cooler were sets of varying numbers of grab sample containers and/or composite sample containers.

Information that was written on each COC form included: project name, names of sampling personnel and sample handling personnel, sample designations for those grab sample containers and composite sample containers that were shipped in the cooler with which the COC form was associated, the sample collection dates and times for these grab sample containers and composite sample containers, the numbers of grab sample containers and composite sample containers stored in the shipping cooler, the analytical methods to which the grab sample containers and composite sample containers were assigned, the methods of chemical preservation that were used in the various grab sample containers and composite sample containers, the sample type (grab or composite) of the sample containers in the cooler, the sample matrix type (e.g., water, soil, etc.) of the samples, and any special remarks (such as notes identifying the sample containers that were designated as MS/MSD samples). The COC forms also provided the name and address of the laboratory to which the shipping coolers were sent. Finally, the COC forms provided spaces for those personnel relinquishing custody and those personnel receiving and assuming custody of the sample containers to sign their names and provide the date and time of transfer of custody whenever the sample containers changed hands. By filling out these particular spaces on the COC forms, an unbroken chain-of-custody, or, paper trail was maintained such that tampering with the samples was prevented. This chain-of-custody procedure also ensured that the disposition of the sample containers could be traced from the time of sample collection to the receipt of the sample containers at the laboratory.

Figures 3.1 and 3.2 give examples of the COC forms used during the sampling effort. Field teams used COC forms provided by both the laboratory as well as by Engineering-Science.

Copies of the COC forms that accompanied the shipping coolers that were sent to the laboratory were kept for filing in record files. The original copies of all COC forms were sent with the shipping coolers to the laboratory. When the samples were received by the laboratory, the COC forms accompanying the samples were filled out by the lab personnel to show that the samples were received into the custody of the lab. These completed COC forms were returned as a part of each data package that was prepared by the laboratory.

Prior to shipment, sample containers (both grab and composite) were carefully packaged to prevent breakage during shipment. In particular, the glass sample containers were wrapped in bubble plastic. All sample containers were enclosed within plastic zip-lock bags to be kept dry and protected from possible contamination during shipment. The sample containers were then packed inside of their shipping coolers. Ice was added to the coolers to keep the sample containers cold during shipment. Trip blanks were placed in those shipping coolers which contained grab sample containers that were to be analyzed for purgeable organics (EPA Method 624). Temperature blanks (used by the lab to measure the approximate sample temperatures upon receipt of the samples at the lab) were also included in most shipping coolers which contained sample containers.

The COC forms assigned to each shipping cooler were filled out, signed, and dated by the sampling personnel, placed inside a sealed plastic zip-lock bag, and placed inside of each shipping coolers. (For each shipping cooler, the COC forms that accompanied that cooler were those COC forms which recorded the exact contents of that cooler.) The shipping coolers were then closed. Custody seals were placed on opposite corners of each shipping cooler such that they covered the lid seam of the cooler. Clear plastic tape was then wrapped around the lid of each shipping cooler such that the custody seals were taped over and the lid seam of the cooler was completely sealed.

All shipping coolers were enclosed in cardboard shipping boxes and then shipped by overnight delivery to the laboratory (Savannah Laboratories and Environmental Services, Inc.). Copies of the airbills and other shipping documentation were kept by the field personnel for storage in record files.

ENGINEERING-SCIENCE
CHAIN OF CUSTODY RECORD

ES JOB NUMBER: AA002.03

PROJECT NAME\LOCATION: Robins AFB, Warner-Robins Ga

SAMPLER(S): (Signature) Alan Ballinger

SHIP TO: Savannah Labs
5102 La Roche Ave.
Savannah, Ga 31404

Date	Time	Sample Description	Number of Containers	EPA 601/602 (HCL)	EPA 624 (HCL)	Cyanide (NaOH)	PH (4°C)	Oil+Grease (H_2SO_4)					Sample Type	Matrix	Remarks
11-5-93	1435	RAFB-SLS-G-21	4			X	X	X					G C	W	
													G C	W	
													G C		
													G C		
													G C		
													G C		
													G C		
													G C		
													G C		
													G C		
		EWB											G C		
													G C		
													G C		
													G C		
													G C		
													G C		
													G C		
													G C		

Relinquished by: (Signature)	Date/Time	Received for Laboratory by:	Date/Time	Remarks:
[signature]	11-5-93 1700	L Baker 46283	11/6/93 12:10 10 hrs	Airbill#: 8446485234

Distribution: Original, yellow and pink sheets sent to lab. Gold retained by field personnel. Lab retains original and sends yellow and pink copies with analytical report.

G - Grab
C - Composite

Figure 3.1

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

☒ 5102 LaRoche Avenue, Savannah, GA 31404 — Phone: (912) 354-7858 — Fax (912) 352-0165
☐ 2846 Industrial Plaza Drive, Tallahassee, FL 32301 — Phone: (904) 878-3994 — Fax (904) 878-9504
☐ 414 Southwest 12th Avenue, Deerfield Beach, FL 33442 — Phone: (305) 421-7400 — Fax (305) 421-2584
☐ 900 Lakeside Drive, Mobile, AL 36693 — Phone: (205) 666-6633 — Fax (205) 666-6696
☐ 6712 Benjamin Road, Suite 100, Tampa, FL 33634 — Phone: (813) 885-7427 — Fax (813) 885-7049

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

P.O. NUMBER	PROJECT NUMBER	PROJECT NAME
	AA002.03	Robins AFB

CLIENT NAME: Engineering-Science
TELEPHONE/FAX NO.: (404) 235-2400
CLIENT ADDRESS: 57 Executive Park, South NE
CITY, STATE, ZIP CODE: Atlanta Ga 30329
SAMPLER(S) NAME(S): Alan Bollinger
CLIENT PROJECT MANAGER: Alan Bollinger

PAGE 1 OF 2

☒ STANDARD TAT
☐ EXPEDITED TAT *
REPORT DUE DATE ____
* SUBJECT TO RUSH FEES

MATRIX TYPE: AQUEOUS MATRIX / NONAQUEOUS MATRIX / OIL MATRIX / AIR MATRIX

REQUIRED ANALYSES — NUMBER OF CONTAINERS SUBMITTED

SAMPLING DATE	SAMPLING TIME	SAMPLE IDENTIFICATION	AQUEOUS MATRIX	NONAQUEOUS MATRIX	OIL MATRIX	AIR MATRIX	~~EPA 601/602~~ SPK	~~EPA 624~~ SPK	COD (410.1)	Flouride (340.2)	FC-MF (Sm9221-C)	Penols (420.1)	Metals (200.7, 239.2)	BOD/TSS/TDS (405.1, 160.2, 160.4)	~~pH~~ SPK	~~Oil & Grease~~ SPK
11-5-93	2435	RAFB-SLS-C-E1	X				~~3~~ SPK	~~3~~ SPK	1	1	1	1	1	1	~~1~~ SPK	~~2~~ SPK

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
[signature]	10/15	[illegible]	[signature]	10/14	1600	[signature]	11-5-93	1700
RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

FOR SAVANNAH LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	S.L. LOG NO.	LABORATORY REMARKS
J Baker	11/6/93	12:20	☑ YES ☐ NO		46283	

Figure 3.2

3.3.11 Rain Gauge Operating Procedures

Portable rain gauges were used to measure the amount of rainfall which accumulated during each of the two rain events. To operate, the gauges were emptied of any accumulation of water prior to the start of the measurement period. The gauges were then placed vertically on the open ground near a sampling location and allowed to collect precipitation. Field personnel monitored the rate of accumulation by reading the level of water in the gauge against the scale printed on the gauge. Each scale had 0.1 inch divisions. Table 3.1 gives the sample locations where the rain gauges were set up during each of the rain events.

3.3.12 Field Test Kit for Free and Total Chlorine, Operating Procedures

The field test kit for measuring free and total chlorine in water samples was used only during the December 4 rain event. Measurements using the kit were conducted on the composite samples after the sample compositing period was completed and the 10-L composite sample jars were transported back to the field office. At the field office, portions of samples from each 10-L composite sample containers chosen for measurement by this method were dispensed into the sample tubes provided with the test kit. The operating instructions for the test kit were followed in order to perform the test for free and total chlorine on each sample. The test kit required no additional equipment in order for the test to be performed. The results from the conducting of this field test on the composite samples collected during the December 4 rain event are presented in Section 4 of this report.

SECTION 4
ANALYTICAL RESULTS

Aside from the use of a Hach® field test kit for the analysis of composite water samples for free and total chlorine during the December 4, 1993 rain event, all analyses were performed at Savannah Laboratories and Environmental Services, Inc., Savannah, Georgia. The results of the field test for free and total chlorine will be presented in the later portion of this section along with the data tables containing the validated laboratory analytical results. The first part of this section will present the laboratory data packages that were sent to Engineering-Science by the laboratory.

4.1 PRESENTATION OF LABORATORY DATA PACKAGES

Attachment A of this report contains two data packages of analytical results: one package for the analysis of the samples collected during the November 5 rain event and one package for the analysis of the samples collected during the December 4 rain event. These packages contain originally submitted pages of the results, as well as revised pages which were submitted to Engineering-Science personnel during their data checking and data validation activities.

The contents of the data packages given in Attachment A conform to the Savannah Laboratories QC Reporting Level II deliverable format. The data in each package contain the following general information: sample analytical results for both the grab samples and composite samples, the field duplicate analytical results (grab and composite), trip blank analytical results (EPA method 624), method blank analytical results, laboratory control standard and laboratory control standard duplicate (LCS/LCS Duplicate) results including percent recovery values and relative percent difference values, MS/MSD results including percent recovery values and relative percent difference values, and copies of the COC forms which accompanied the samples. For both data packages, the results for all samples, field duplicate samples, trip blanks, method blanks, LCS/LCS duplicate samples, and the MS/MSD samples include surrogate spike results (percent recoveries). For both data packages, the results for all samples, field duplicate samples, and trip blank samples include the sampling dates. The results for all samples, field duplicate samples, trip blank samples, and method blanks also include the analysis dates. In addition, the results for all samples, field duplicate samples, and method blanks include the extraction dates for the results of all applicable analytical methods (EPA methods 608, 610, and 625).

4.2 PRESENTATION OF DATA VALIDATION RESULTS

Attachment B contains two data validation report packages: one corresponding to the data validation of the laboratory data package for the analysis of samples collected during the November 5 rain event and one corresponding to the data validation of the laboratory data package for the analysis of samples which were collected during the December 4 rain event.

Each of the two data validation report packages given in Attachment B includes individual data validation reports for the following methods of analysis: purgeable organics (EPA method 624), base/neutrals and acids (EPA method 625), polynuclear aromatic hydrocarbons (EPA method 610), organochlorine pesticides and PCBs (EPA method 608), and total metals (Cd, Cr, Cu, Ni, Ag, Zn, Pb) by ICP and Furnace AA (EPA methods 200.7 and 239.2). In addition, there is a data validation report for each of the two packages which combines the data validation results of the following analytical methods: total cyanide (EPA method 335.3), pH (EPA method 150.1), and total recoverable oil and grease (EPA method 413.2). Finally, there is a data validation report for each of the two packages which combines the data validation results of the following analytical methods: chemical oxygen demand (EPA method 410.2), fluoride (EPA method 340.2), residual chlorine (SM408A - data validation results for this analytical method are presented only in the November 5 rain event report package), biochemical oxygen demand (EPA method 405.1), non-filterable residue (total suspended solids, EPA method 160.2), filterable residue (total dissolved solids, EPA method 160.1), fecal coliform (Standard Method 9222-D for the November 5 rain event data validation report package, and Standard Method 9221-C for the December 4 rain event data validation report package), total recoverable phenolics (EPA method 420.2), total Kjeldahl nitrogen (EPA method 351.2), ammonia nitrogen (EPA method 350.1), nitrate-nitrite nitrogen (EPA method 353.2), organic nitrogen (EPA methods 351.2/350.1), and total phosphorus (EPA method 365.4).

Most of the details pertaining to the procedures and results of the data validation effort for the analytical data resulting from the November 5 rain event can be found in the November 5 rain event data validation package (Attachment B). However, some additional information needs to be provided concerning the assessment of whether or not the holding times were met for each of the analytical methods. The data validation team used the grab sample collection dates and times and the composite sample collection dates and times recorded on the COC forms in order to facilitate the determination of whether or not sample preparation and analysis procedures occurred within the maximum holding time limits set for each analytical method (see Table 2.2 for a listing of these holding time limits). While the sample collection dates given on the COC forms for the grab samples collected during the November 5 rain event are correct, some of the sample collection times given on these COC forms for the grab samples are incorrect. Each of the grab sample collection times recorded on the COC forms either: (1) was the true collection time for that particular grab sample, (2) preceded by 15 minutes the true collection time for that particular grab sample, or (3) followed by 15 minutes the true collection time for that particular grab sample. Because the data validators used grab sample collection times which either equaled, slightly preceded, or slightly followed the

true grab sample collection times during their assessment of whether or not sample preparation and analysis procedures occurred within the maximum holding time limits set for each analytical method, there is the possibility that the data validators may have made some erroneous judgments concerning whether or not holding times were exceeded. If the data validators had used the correct grab sample collection times during their assessment, a more accurate determination could have been made as to whether or not holding times were exceeded. Additionally, the sample collection dates given on the COC forms for the composite samples collected during the November 5 rain event are correct; however the sample collection times given on the COC forms for the composite samples are incorrect. Since the composite samples collected during the November 5 rain event were collected over a period of roughly three hours, the sample collection times for each of these samples actually consists of a range of times (e.g., 1:00 A.M. to 3:40 A.M.). The sample collection times written on the COC forms for each of these composite samples, however, consisted of only a single, discrete time (e.g., 12:50 A.M.). Furthermore, each of these single composite sample collection times recorded on the COC forms either: (1) was the true collection time of the <u>first</u> composite sample aliquot that was collected for that particular composite sample; or, (2) preceded by 10-30 minutes the true collection time of the first composite sample aliquot that was collected for that particular composite sample. Because the data validators used discrete composite sample collection times which either equaled or slightly preceded the true collection times of the first composite sample aliquots of the composite samples during their assessment of whether or not sample preparation and analysis procedures occurred within the maximum holding time limits set for each analytical method, there is the possibility that the data validators may have erroneously judged that some holding times were exceeded. If the data validators had used the correct composite sample collection time ranges during their assessment, a more accurate determination could have been made as to whether or not holding times were exceeded.

The potential influence of these errors (in the grab sample collection times and composite sample collection times used by the data validators) on the holding time limit assessment process for the analytical data of the grab and composite samples collected during the November 5 rain event would have been greatest for those analytical methods that have short holding time limits (pH, biochemical oxygen demand, fecal coliform, and residual chlorine). The effects of these data validation errors on the analytical data are considered to be minor. The fact that the incorrect composite sample collection times and all but one of the incorrect grab sample collection times given on the COCs precede their correct sample collection times means that the assessment of whether or not holding time limits were exceeded was conducted in a conservative manner from the standpoint of the data validator. This conservative approach could have possibly led to some of the resultant analytical data being over-qualified with respect to their final useability. This is preferable, however, to a condition that leads to an under-conservative data validation effort where the resultant analytical data are left under-qualified with respect to their useability. Secondly, because the errors in the grab sample collection times and the composite sample collection times that were used by the data validators were small in terms of length-of-time, the effects these errors had on the assessment of whether or not holding time limits were exceeded should be inconsequential. Finally, because the exact

times for the preparation and analysis of samples were not provided in the data package submitted by the laboratory (only sample preparation dates and sample analysis dates were provided), the data validators were forced to estimate the durations of the periods of time between sample collection and sample preparation and analysis during their holding time limit assessment process. These estimates of the durations of these periods of time probably had uncertainties in their magnitudes which exceeded the largest of the discrepancies between the erroneous grab and composite sample collection times recorded on the COC forms and their corresponding correct grab and composite sample collection times.

It should be noted that for the data validation effort on the analytical data resulting from the December 4 rain event (see the December 4 rain event data validation report package in Attachment B), the data validation team used the grab sample collection dates and times and the composite sample collection dates and times recorded in Table 3.2 of this report in order to facilitate the determination of whether or not sample preparation and analysis procedures occurred within the maximum holding time limits set for each analytical method. The grab sample collection dates and times and the composite sample collection dates and times given in Table 3.2 are correct. Also note from Table 3.2 that, for the composite samples collected during the December 4 rain event, the total duration from the beginning to the end of the collection of composite sample aliquots from each sampling location ranges from 45 minutes to 1 hour, 25 minutes. However, for each particular composite sample that was collected during the December 4 rain event, the data validation team chose to use the sample collection time of the last composite sample aliquot collected from that composite samples' sampling location as the collection time for that particular composite sample to assess whether or not sample preparation and analysis procedures occurred within the maximum holding time limits set for the analytical methods applied to that particular composite sample.

4.3 PRESENTATION OF ANALYTICAL RESULTS

Table 4.1 contains the laboratory analytical results for the analysis of the grab samples and composite samples which were collected at RAFB during the November 5 rain event. Sample Locations 1 through 8 were sampled during this rain event. Table 4.2 contains the laboratory analytical results for the analysis of the grab samples and composite samples which were collected during the December 4 rain event. Sample locations 9 through 12 were sampled during this rain event.

The data presented in Tables 4.1 and 4.2 are the fully validated data which resulted from the data validation effort performed on the laboratory data packages given in Attachment A of this report. As a result of this data validation efforts, several data qualifier flags were assigned to various parts of the data (i.e., U, UJ, J, and R-flags). Also contained in Tables 4.1 and 4.2 are the detection limits as set forth by the Georgia Environmental Protection Division for NPDES analytes. These detection limits are provided in the table as a convenience for comparing them to the laboratory reporting limits of the various methods of analysis.

Appendix I of the SWPPP provides a template for presenting future laboratory data as it appears in Tables 4.1 and 4.2. This template can be used to present the analytical data resulting from the future sampling efforts at RAFB.

Table 4.3 contains the free and total chlorine field test results for the composite samples collected during the December 4 rain event. As noted in an earlier section of this report, the composite samples collected during the November 5 rain event were sent to the laboratory for residual chlorine analysis (by method SM408A); these samples were not field tested for free and total chlorine.

4.4 DISCUSSION

This section describes the prominent findings among the analytical results presented in Tables 4.1, 4.2, and 4.3.

The grab samples collected during the November 5 rain event were analyzed for purgeable organics (EPA 624), pH (EPA 150.1), total recoverable oil and grease (EPA 413.2), and total cyanide (EPA 335.3). Total cyanide was not detected in any of the grab samples. The pH values measured at the laboratory for these grab samples ranged from 5.9 to 6.8; these values were flagged J as estimated since these measurements were made beyond the holding time limit for this analytical method. Total recoverable oil and grease was found at 2.8 mg/L and 2.3 mg/L in samples RAFB-SL2-G-E1 and RAFB-SL5-G-E1, respectively. Higher levels of total recoverable oil and grease were found in samples RAFB-SL6-G-E1 (20 mg/L) and RAFB-SL16-G-E1 (26 mg/L). Grab sample RAFB-SL16-G-E1 was the field duplicate of grab sample RAFB-SL6-G-E1. Notice that the total cyanide, pH, and total recoverable oil and grease results for sample RAFB-SL16-G-E1 agree closely with the total cyanide, pH, and total recoverable oil and grease results for sample RAFB-SL6-G-E1.

No purgeable organics (EPA 624) were detected in samples RAFB-SL2-G-E1, RAFB-SL3-G-E1, RAFB-SL4-G-E1, and RAFB-SL5-G-E1. Sample RAFB-SL1-G-E1 contained the following analytes at detectable concentrations: benzene (24 J µg/L), ethylbenzene (1.4 J µg/L), and toluene (1.3 J µg/L). Sample RAFB-SL6-G-E1 contained the following analytes at detectable concentrations: benzene (1.5 J µg/L), chlorobenzene (8.7 J µg/L), and toluene (1.2 J µg/L). Sample RAFB-SL7-G-E1 contained chlorobenzene at 2 J µg/L. Sample RAFB-SL8-C-E1 contained the following analytes at detectable concentrations: chlorobenzene (4 J ug/L), cis 1,2-dichloroethene (3 ug/L), trichloroethylene (20 ug/L), and trichlorofluoromethane (1.1 ug/L). Finally, sample RAFB-SL16-G-E1 contained the following analytes at detectable concentrations: benzene (4.8 J µg/L), ethylbenzene (6.3 J µg/L), toluene (19 J µg/L), and xylenes (33 µg/L). Notice that, while sample RAFB-SL16-G-E1 was the field duplicate of sample RAFB-SL6-G-E1, there are some differences in their purgeable organics results.

Table 4.1 Robins AFB Analysis Results

Sample ID Matrix	GA EPD NPDES D.L	SL1-G-E1 WATER	SL2-G-E1 WATER	SL3-G-E1 WATER	SL4-G-E1 WATER	SL5-G-E1 WATER
EPA Method 624 - ug/l						
Benzene	2.0	24 J	1 U	1 U	1 U	1 U
Bromodichloromethane	10	1 U	1 U	1 U	1 U	1 U
Bromoform	10	1 U	1 U	1 U	1 U	1 U
Bromomethane	10	1 U	1 U	1 U	1 U	1 U
Carbon Tetrachloride	2.0	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	10	1 U	1 U	1 U	1 U	1 U
Chloroethane	5.0	1 U	1 U	1 U	1 U	1 U
2-Chloroethylvinyl Ether	10	10 U	10 U	10 U	10 U	10 U
Chloroform	2.0	1 U	1 U	1 U	1 U	1 U
Chloromethane	10	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane	10	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	10	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	10	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	10	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	2.0	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	2.0	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	2.0	1 U	1 U	1 U	1 U	1 U
Trans-1,2-Dichloroethene	2.0	1 U	1 U	1 U	1 U	1 U
Cis-1,2-Dichloroethene		1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	2.0	1 U	1 U	1 U	1 U	1 U
Cis-1,3-Dichloropropene	2.0	1 U	1 U	1 U	1 U	1 U
Trans-1,3-Dichloropropene	2.0	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	2.0	1.4 J	1 U	1 U	1 U	1 U
Methylene Chloride	10	1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	2.0	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	2.0	1 U	1 U	1 U	1 U	1 U
Toluene	2.0	1.3 J	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	2.0	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	2.0	1 U	1 U	1 U	1 U	1 U
Trichloroethylene	2.0	1 U	1 U	1 U	1 U	1 U
Trichlorofluoromethane		1 U	1 U	1 U	1 U	1 U
Vinyl Chloride	10	1 U	1 U	1 U	1 U	1 U
Xylenes		1 U	1 U	1 U	1 U	1 U
Acrolein	50	50 U	50 U	50 U	50 U	50 U
Acrylonitrile	50	50 U	50 U	50 U	50 U	50 U
EPA Method 335.3 - mg/l						
Cyanide	0.025	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
EPA Method 150.1						
pH		6.2 J	6.5 J	6.5 J	6.2 J	6.5 J
EPA Method 413.2 - mg/l						
Oil & Grease		1 U	2.8	1 U	1 U	2.3

Table 4.1 - Continued Robins AFB Analysis Results

Sample ID	GA EPD	SL6-G-E1	SL7-G-E1	SL8-G-E1	SL16-G-E1
Matrix	NPDES D.L	WATER	WATER	WATER	WATER
EPA Method 624 - ug/l					
Benzene	2.0	1.5 J	1 U	1 U	4.8 J
Bromodichloromethane	10	1 U	1 U	1 U	1 U
Bromoform	10	1 U	1 U	1 U	1 U
Bromomethane	10	1 U	1 U	1 U	1 U
Carbon Tetrachloride	2.0	1 U	1 U	1 U	1 U
Chlorobenzene	10	8.7 J	2 J	4 J	1 U
Chloroethane	5.0	1 U	1 U	1 U	1 U
2-Chloroethylvinyl Ether	10	10 U	10 U	10 U	10 U
Chloroform	2.0	1 U	1 U	1 U	1 U
Chloromethane	10	1 U	1 U	1 U	1 U
Dibromochloromethane	10	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	10	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	10	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	10	1 U	1 U	1 U	1 U
1,1-Dichloroethane	2.0	1 U	1 U	1 U	1 U
1,2-Dichloroethane	2.0	1 U	1 U	1 U	1 U
1,1-Dichloroethene	2.0	1 U	1 U	1 U	1 U
Trans-1,2-Dichloroethene	2.0	1 U	1 U	1 U	1 U
Cis-1,2-Dichloroethene		1 U	1 U	3	1 U
1,2-Dichloropropane	2.0	1 U	1 U	1 U	1 U
Cis-1,3-Dichloropropene	2.0	1 U	1 U	1 U	1 U
Trans-1,3-Dichloropropene	2.0	1 U	1 U	1 U	1 U
Ethylbenzene	2.0	1 U	1 U	1 U	6.3 J
Methylene Chloride	10	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	2.0	1 U	1 U	1 U	1 U
Tetrachloroethene	2.0	1 U	1 U	1 U	1 U
Toluene	2.0	1.2 J	1 U	1 U	19 J
1,1,1-Trichloroethane	2.0	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	2.0	1 U	1 U	1 U	1 U
Trichloroethylene	2.0	1 U	1 U	20	1 U
Trichlorofluoromethane		1 U	1 U	1.1	1 U
Vinyl Chloride	10	1 U	1 U	1 U	1 U
Xylenes		1 U	1 U	1 U	33
Acrolein	50	50 U	50 U	50 U	50 U
Acrylonitrile	50	50 U	50 U	50 U	50 U
EPA Method 335.3 - mg/l					
Cyanide	0.025	0.01 U	0.01 U	0.01 U	0.01 U
EPA Method 150.1					
pH		6.8 J	5.9 J	6.6 J	6.8 J
EPA Method 413.2 - mg/l					
Oil & Grease		20	1 U	1 U	26

Table 4.1 - Continued Robins AFB Analysis Results

Sample ID Matrix	GA EPD NPDES D.L	SL1-C-E1 WATER	SL2-C-E1 WATER	SL3-C-E1 WATER	SL4-C-E1 WATER	SL5-C-E1 WATER
EPA Method 625 - ug/l						
Acenaphthene	10	10 U	10 U	10 U	10 U	10 U
Acenaphthylene	10	10 U	10 U	10 U	10 U	10 U
Anthracene	10	10 U	10 U	10 U	10 U	10 U
Benzo(a)anthracene	10	10 U	10 U	10 U	10 U	10 U
Benzo(b)fluoranthene	10	10 U	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene	10	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene	10	10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene	10	10 U	10 U	10 U	10 U	10 U
Benzyl butyl phthalate	10	10 U	10 U	10 U	10 U	10 U
Bis(2-Chloroethyl)ether	10	10 U	10 U	10 U	10 U	10 U
Bis(2-Chloroethoxy)methene	10	10 U	10 U	10 U	10 U	10 U
Bis(2-Ethylhexyl)phthalate	10	10 U	10 U	10 U	10 U	10 U
Bis(2-Chloroisopropyl)ether	10	10 U	10 U	10 U	10 U	10 U
4-Bromophenyl-phenyl-ether	10	10 U	10 U	10 U	10 U	10 U
2-Chloronaphthalene	10	10 U	10 U	10 U	10 U	10 U
4-Chlorophenyl-phenyl-ether	10	10 U	10 U	10 U	10 U	10 U
Chrysene	10	10 U	10 U	10 U	10 U	10 U
Dibenz(a,h)anthracene	10	10 U	10 U	10 U	10 U	10 U
Di-n-butylphthalate	10	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	10	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	10	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	10	10 U	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine	20	20 U	20 U	20 U	20 U	20 U
Diethylphthalate .	10	10 U	10 U	10 U	10 U	10 U
Dimethylphthalate	10	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene	20	20 U	20 U	20 U	20 U	20 U
2,6-Dinitrotoluene	20	20 U	20 U	20 U	20 U	20 U
Di-n-octylphthalate	10	10 U	10 U	10 U	10 U	10 U
Fluoranthene	10	10 U	10 U	10 U	10 U	10 U
Fluorene	10	10 U	10 U	10 U	10 U	10 U
Hexachlorobenzene	10	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene	10	10 U	10 U	10 U	10 U	10 U
Hexachloroethane	2	2 U	2 U	2 U	2 U	2 U
Indeno(1,2,3-cd)pyrene	10	10 U	10 U	10 U	10 U	10 U
Isophorone	10	10 U	10 U	10 U	10 U	10 U
Naphthalene	10	10 U	10 U	10 U	10 U	10 U
Nitrobenzene	10	10 U	10 U	10 U	10 U	10 U
N-Nitrosodi-N-Propylamine	10	10 U	10 U	10 U	10 U	10 U
Phenanthrene	10	10 U	10 U	10 U	10 U	10 U
Pyrene	10	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene	10	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-Methylphenol	10	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol	10	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol	10	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	10	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrophenol	50	50 U	50 U	50 U	50 U	50 U
2-Methyl-4,6-Dinitrophenol	50	50 U	50 U	50 U	50 U	50 U
2-Nitrophenol	50	10 U	10 U	10 U	10 U	10 U

Table 4.1 - Continued Robins AFB Analysis Results

Sample ID Matrix	GA EPD NPDES D.L	SL6-C-E1 WATER	SL7-C-E1 WATER	SL8-C-E1 WATER	SL16-C-E1 WATER
EPA Method 625 - ug/l					
Acenaphthene	10	10 U	10 U	10 U	10 U
Acenaphthylene	10	10 U	10 U	10 U	10 U
Anthracene	10	10 U	10 U	10 U	10 U
Benzo(a)anthracene	10	10 U	10 U	10 U	10 U
Benzo(b)fluoranthene	10	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene	10	10 U	10 U	10 U	10 U
Benzo(a)pyrene	10	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene	10	10 U	10 U	10 U	10 U
Benzyl butyl phthalate	10	10 U	10 U	10 U	10 U
Bis(2-Chloroethyl)ether	10	10 U	10 U	10 U	10 U
Bis(2-Chloroethoxy)methene	10	10 U	10 U	10 U	10 U
Bis(2-Ethylhexyl)phthalate	10	10 U	10 U	10 U	10 U
Bis(2-Chloroisopropyl)ether	10	10 U	10 U	10 U	10 U
4-Bromophenyl-phenyl-ether	10	10 U	10 U	10 U	10 U
2-Chloronaphthalene	10	10 U	10 U	10 U	10 U
4-Chlorophenyl-phenyl-ether	10	10 U	10 U	10 U	10 U
Chrysene	10	10 U	10 U	10 U	10 U
Dibenz(a,h)anthracene	10	10 U	10 U	10 U	10 U
Di-n-butylphthalate	10	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	10	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	10	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	10	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine	20	20 U	20 U	20 U	20 U
Diethylphthalate	10	10 U	10 U	10 U	10 U
Dimethylphthalate	10	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene	20	20 U	20 U	20 U	20 U
2,6-Dinitrotoluene	20	20 U	20 U	20 U	20 U
Di-n-octylphthalate	10	10 U	10 U	10 U	10 U
Fluoranthene	10	10 U	10 U	10 U	10 U
Fluorene	10	10 U	10 U	10 U	10 U
Hexachlorobenzene	10	10 U	10 U	10 U	10 U
Hexachlorobutadiene	10	10 U	10 U	10 U	10 U
Hexachloroethane	2	2 U	2 U	2 U	2 U
Indeno(1,2,3-cd)pyrene	10	10 U	10 U	10 U	10 U
Isophorone	10	10 U	10 U	10 U	10 U
Naphthalene	10	10 U	10 U	10 U	10 U
Nitrobenzene	10	10 U	10 U	10 U	10 U
N-Nitrosodi-N-Propylamine	10	10 U	10 U	10 U	10 U
Phenanthrene	10	10 U	10 U	10 U	10 U
Pyrene	10	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene	10	10 U	10 U	10 U	10 U
4-Chloro-3-Methylphenol	10	10 U	10 U	10 U	10 U
2-Chlorophenol	10	10 U	10 U	10 U	10 U
2,4-Dichlorophenol	10	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	10	10 U	10 U	10 U	10 U
2,4-Dinitrophenol	50	50 U	50 U	50 U	50 U
2-Methyl-4,6-Dinitrophenol	50	50 U	50 U	50 U	50 U
2-Nitrophenol	50	10 U	10 U	10 U	10 U

Table 4.1 - Continued Robins AFB Analysis Results

Sample ID Matrix	GA EPD NPDES D.L	SL1-C-E1 WATER	SL2-C-E1 WATER	SL3-C-E1 WATER	SL4-C-E1 WATER	SL5-C-E1 WATER
EPA Method 625 - ug/l (cont)						
4-Nitrophenol	50	50 U	50 U	50 U	50 U	50 U
Pentachlorophenol	20	20 U	20 U	20 U	20 U	20 U
Phenol	10	10 U	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol	10	10 U	10 U	10 U	10 U	10 U
EPA Method 610 - ug/l						
Acenapthene	10	10 U	10 U	10 U	10 U	10 U
Acenaphthylene	10	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene	10	10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene	10	10 U	10 U	10 U	10 U	10 U
Benzo(b,k)fluoranthene	10	10 U	10 U	10 U	10 U	10 U
Chrysene + Benzo(a) Anthracene	10	10 U	10 U	10 U	10 U	10 U
Fluoranthene	10	10 U	10 U	10 U	10 U	10 U
Fluorene	10	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene + Dibenz(a,h)anthracene	10	10 U	10 U	10 U	10 U	10 U
Naphthalene	10	10 U	10 U	10 U	10 U	10 U
Phenanthrene + Anthracene	10	10 U	10 U	10 U	10 U	10 U
Pyrene	10	10 U	10 U	10 U	10 U	10 U
1-Methylnaphthalene		10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene		10 U	10 U	10 U	10 U	10 U
EPA Method 608 - ug/l						
Aldrin	0.1	0.05 U	0.05 U	0.05 R	0.05 R	0.05 U
alpha-BHC	0.1	0.05 U	0.05 U	0.05 R	0.05 R	0.05 U
beta-BHC	0.1	0.05 U	0.05 U	0.05 R	0.05 R	0.05 U
gamma-BHC	0.1	0.05 U	0.05 U	0.05 R	0.05 R	0.05 U
delta-BHC	0.1	0.05 U	0.05 U	0.05 R	0.05 R	0.05 U
Chlordane	0.5	0.5 U	0.5 U	0.5 R	0.5 R	0.5 U
4,4'-DDD	0.2	0.1 U	0.1 U	0.1 R	0.1 R	0.1 U
4,4'-DDE	0.2	0.1 U	0.1 U	0.1 R	0.1 R	0.1 U
4,4'-DDT	0.2	0.1 U	0.1 U	0.1 R	0.1 R	0.1 U
Dieldrin	0.5	0.1 U	0.1 U	0.1 R	0.1 R	0.1 U
Endosulfan I	0.5	0.05 U	0.05 U	0.05 R	0.05 R	0.05 U
Endosulfan II	0.5	0.1 U	0.1 U	0.1 R	0.1 R	0.1 U
Endosulfan Sulfate	0.5	0.1 U	0.1 U	0.1 R	0.1 R	0.1 U
Endrin	0.2	0.1 U	0.1 U	0.1 R	0.1 R	0.1 U
Endrin Aldehyde	0.2	0.1 U	0.1 U	0.1 R	0.1 R	0.1 U
Heptachlor	0.1	0.05 U	0.05 U	0.05 R	0.05 R	0.05 U
Heptachlor Epoxide	0.1	0.05 U	0.05 U	0.05 R	0.05 R	0.05 U
Kepone		0.1 U	0.1 U	0.1 R	0.1 R	0.1 U
Methoxychlor	0.3	0.3 U	0.3 U	0.3 R	0.3 R	0.3 U
Toxaphene	2.0	2 U	2 U	2 R	2 R	2 U
Aroclor-1016		1.0 U	1.0 U	1.0 R	1.0 R	1.0 U
Aroclor-1221		1.0 U	1.0 U	1.0 R	1.0 R	1.0 U
Aroclor-1232		1.0 U	1.0 U	1.0 R	1.0 R	1.0 U
Aroclor-1242		1.0 U	1.0 U	1.0 R	1.0 R	1.0 U
Aroclor-1248		1.0 U	1.0 U	1.0 R	1.0 R	1.0 U
Aroclor-1254		1.0 U	1.0 U	1.0 R	1.0 R	1.0 U
Aroclor-1260		1.0 U	1.0 U	1.0 R	1.0 R	1.0 U

Table 4.1 - Continued Robins AFB Analysis Results

Sample ID Matrix	GA EPD NPDES D.L	SL6-C-E1 WATER	SL7-C-E1 WATER	SL8-C-E1 WATER	SL16-C-E1 WATER
EPA Method 625 - ug/l (cont)					
4-Nitrophenol	50	50 U	50 U	50 U	50 U
Pentachlorophenol	20	20 U	20 U	20 U	20 U
Phenol	10	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol	10	10 U	10 U	10 U	10 U
EPA Method 610 - ug/l					
Acenapthene	10	10 U	10 U	10 U	10 U
Acenaphthylene	10	10 U	10 U	10 U	10 U
Benzo(a)pyrene	10	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene	10	10 U	10 U	10 U	10 U
Benzo(b,k)fluoranthene	10	10 U	10 U	10 U	10 U
Chrysene + Benzo(a) Anthracene	10	10 U	10 U	10 U	10 U
Fluoranthene	10	10 U	10 U	10 U	10 U
Fluorene	10	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene + Dibenz(a,h)anthracene	10	10 U	10 U	10 U	10 U
Naphthalene	10	10 U	10 U	10 U	10 U
Phenanthrene + Anthracene	10	10 U	10 U	10 U	10 U
Pyrene	10	10 U	10 U	10 U	10 U
1-Methylnaphthalene		10 U	10 U	10 U	10 U
2-Methylnaphthalene		10 U	10 U	10 U	10 U
EPA Method 608 - ug/l					
Aldrin	0.1	0.05 U	0.05 U	0.05 U	0.05 U
alpha-BHC	0.1	0.05 U	0.05 U	0.05 U	0.05 U
beta-BHC	0.1	0.05 U	0.05 U	0.05 U	0.05 U
gamma-BHC	0.1	0.05 U	0.05 U	0.05 U	0.05 U
delta-BHC	0.1	0.05 U	0.05 U	0.05 U	0.05 U
Chlordane	0.5	0.5 U	0.5 U	0.5 U	0.5 U
4,4'-DDD	0.2	0.1 U	0.1 U	0.1 U	0.1 U
4,4'-DDE	0.2	0.1 U	0.1 U	0.1 U	0.1 U
4,4'-DDT	0.2	0.1 U	0.1 U	0.1 U	0.1 U
Dieldrin	0.5	0.1 U	0.1 U	0.1 U	0.1 U
Endosulfan I	0.5	0.05 U	0.05 U	0.05 U	0.05 U
Endosulfan II	0.5	0.1 U	0.1 U	0.1 U	0.1 U
Endosulfan Sulfate	0.5	0.1 U	0.1 U	0.1 U	0.1 U
Endrin	0.2	0.1 U	0.1 U	0.1 U	0.1 U
Endrin Aldehyde	0.2	0.1 U	0.1 U	0.1 U	0.1 U
Heptachlor	0.1	0.05 U	0.05 U	0.05 U	0.05 U
Heptachlor Epoxide	0.1	0.05 U	0.05 U	0.05 U	0.05 U
Kepone		0.1 U	0.1 U	0.1 U	0.1 U
Methoxychlor	0.3	0.3 U	0.3 U	0.3 U	0.3 U
Toxaphene	2.0	2 U	2 U	2 U	2 U
Aroclor-1016		1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1221		1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1232		1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1242		1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1248		1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1254		1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1260		1.0 U	1.0 U	1.0 U	1.0 U

Table 4.1 - Continued Robins AFB Analysis Results

Sample ID Matrix	GA EPD NPDES D.L	SL1-C-E1 WATER	SL2-C-E1 WATER	SL3-C-E1 WATER	SL4-C-E1 WATER	SL5-C-E1 WATER
EPA Method 410.2 - mg/l						
Chemical Oxygen Demand		20 U	23	25	36	20
EPA Method 340.2 - mg/l						
Fluoride		0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Standard Methods 408A - mg/l						
Residual Chlorine		1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
EPA Method 405.1 - mg/l						
Biochemical Oxygen Demand		2 U	2	3.9	2.1	2 U
EPA Method 160.2 - mg/l						
Total Suspended Solids		5 U	9.5	24	5 U	5 U
EPA Method 160.1 - mg/l						
Total Dissolved Solids		34	21	37	43	28
Standard Methods 9222-D - col/100mls						
Fecal Coliform		8 J	150 J	160 J	20 J	10 J
EPA Method 420.2 - mg/l						
Total Recoverable Phenolics		0.01 U	0.01 U	0.01 U	0.01 U	0.042
EPA Method 200.7 - mg/l						
Cadmium	0.01	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Chromium	0.01	0.01 U	0.01 U	0.012	0.01 U	0.01 U
Copper	0.02	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Nickel	0.02	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Silver	0.01	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Zinc	0.02	0.02 U	0.043	0.074	0.02 U	0.02 U
EPA Method 239.2 - mg/l						
Lead	0.025	0.005 U	0.005 U	.0074	0.005 U	0.005 U
EPA Method 351.2 - mg/l						
Total Kjeldahl Nitrogen		0.26	0.37	0.48	0.81	0.53
EPA Method 350.1 -mg/l						
Ammonia-N		0.22 J	0.24 J	0.079 J	0.49 J	0.59 J
EPA Method 353.2 - mg/l						
Nitrate + Nitrite-N		0.16 J	0.17 J	0.37 J	0.05 UJ	0.14 J
EPA Method 351.2/350.1 - mg/l						
Nitrogen (Organic)		0.07 U	0.13	0.4	0.32	0.07 U
EPA Method 365.4 - mg/l						
Total Phosphorus		0.1 U	0.11	0.1 U	0.1 U	0.1 U

Table 4.1 - Continued Robins AFB Analysis Results

Sample ID Matrix	GA EPD NPDES D.L	SL6-C-E1 WATER	SL7-C-E1 WATER	SL8-C-E1 WATER	SL16-C-E1 WATER
EPA Method 410.2 - mg/l					
Chemical Oxygen Demand		20 U	39	41	27
EPA Method 340.2 - mg/l					
Fluoride		0.2 U	0.2 U	0.2 U	0.2 U
Standard Methods 408A - mg/l					
Residual Chlorine		1 UJ	1 UJ	1 UJ	1 UJ
EPA Method 405.1 - mg/l					
Biochemical Oxygen Demand		2.3	2.5	2.3	2
EPA Method 160.2 - mg/l					
Total Suspended Solids		5 U	12	13	5 U
EPA Method 160.1 - mg/l					
Total Dissolved Solids		22	47	79	24
Standard Methods 9222-D - col/100mls					
Fecal Coliform		28 J	0 UJ	>2000 J	69 J
EPA Method 420.2 - mg/l					
Total Recoverable Phenolics		0.01 U	0.01 U	0.01 U	0.01 U
EPA Method 200.7 - mg/l					
Cadmium	0.01	0.005 U	0.005 U	0.005 U	0.005 U
Chromium	0.01	0.01 U	0.017	0.01 U	0.01 U
Copper	0.02	0.02 U	0.02 U	0.02 U	0.02 U
Nickel	0.02	0.02 U	0.02 U	0.02 U	0.02 U
Silver	0.01	0.01 U	0.01 U	0.01 U	0.01 U
Zinc	0.02	0.035	0.25	0.074	0.038
EPA Method 239.2 - mg/l					
Lead	0.025	0.005 U	0.005 U	0.01	0.005 U
EPA Method 351.2 - mg/l					
Total Kjeldahl Nitrogen		0.21	0.94	0.55	0.24
EPA Method 350.1 -mg/l					
Ammonia-N		0.059 J	0.61 J	0.31 J	0.058 J
EPA Method 353.2 - mg/l					
Nitrate + Nitrite-N		0.14 J	0.078 J	0.63 J	0.16 J
EPA Method 351.2/350.1 - mg/l					
Nitrogen (Organic)		0.15	0.33	0.24	0.18
EPA Method 365.4 - mg/l					
Total Phosphorus		0.1 U	0.1 U	0.4	0.1 U

TABLE 4.2 ROBINS AFB ANALYSIS RESULTS

Sample ID	GA EPD	SL9-G-E1	SL10-G-E1	SL11-G-E1	SL12-G-E1	SL13-G-E1	TB2
Matrix	NPDES D.L	WATER	WATER	WATER	WATER	WATER	WATER
EPA Method 624 - ug/l							
Benzene	2.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromodichloromethane	10	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform	10	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane	10	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride	2.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	10	1.0 U	1.0 U	8.9	1.0 U	1.0 U	1.0 U
Chloroethane	5.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Chloroethylvinyl Ether	10	10 U	10 U	10 U	10 U	10 U	10 U
Chloroform	2.0	2.4	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane	10	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dibromochloromethane	10	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	10	1.0 U	1.0 U	3.1	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	10	1.0 U	1.0 U	1.0	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	10	1.0 U	1.0 U	1.4	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	2.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	2.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	2.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trans-1,2-Dichloroethene	2.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Cis-1,2-Dichloroethene		1.0 U	1.0 U	6.1	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	2.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Cis-1,3-Dichloropropene	2.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trans-1,3-Dichloropropene	2.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	2.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride	10	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	2.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	2.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	2.0	1.0 U	1.1	1.0 U	1.0 U	1.5	1.0 U
1,1,1-Trichloroethane	2.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	2.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethylene	2.0	1.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichlorfluoromethane		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl Chloride	10	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acrolein	50	50 U	50 U	50 U	50 U	50 U	50 U
Acrylonitrile	50	50 U	50 U	50 U	50 U	50 U	50 U
EPA Method 335.3 - mg/l							
Cyanide	25	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	
EPA Method 150.1							
pH		6.0 J	6.4 J	6.1 J	8.3 J	6.3 J	
EPA Method 413.2 - mg/l							
Oil & Grease		1.0 U	1.0 U	1.0 U	3.6	1.0 U	

TABLE 4.2 - Continued ROBINS AFB ANALYSIS RESULTS

Sample ID	GA EPD	SL9-C-E1	SL10-C-E1	SL11-C-E1	SL12-C-E1	SL13-C-E1
Matrix	NPDES D.I	WATER	WATER	WATER	WATER	WATER
EPA Method 625 - ug/l						
Acenaphthene	10	10 U	10 U	10 U	10 U	10 U
Acenaphthylene	10	10 U	10 U	10 U	10 U	10 U
Anthracene	10	10 U	10 U	10 U	10 U	10 U
Benzo(a)anthracene	10	10 U	10 U	10 U	10 U	10 U
Benzo(b)fluoranthene	10	10 U	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene	10	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene	10	10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene	10	10 U	10 U	10 U	10 U	10 U
Benzyl butyl phthalate	10	10 U	10 U	10 U	10 U	10 U
Bis(2-Chloroethyl)ether	10	10 U	10 U	10 U	10 U	10 U
Bis(2-Chloroethoxy)ether		10 U	10 U	10 U	10 U	10 U
Bis(2-Ethylhexyl)phthalate	10	10 U	10 U	10 U	10 U	10 U
Bis(2-Chloroisopropyl)ether	10	10 U	10 U	10 U	10 U	10 U
4-Bromophenyl-phenyl-ether	10	10 U	10 U	10 U	10 U	10 U
2-Chloronaphthalene	10	10 U	10 U	10 U	10 U	10 U
4-Chlorophenyl-phenyl-ether	10	10 U	10 U	10 U	10 U	10 U
Chrysene	10	10 U	10 U	10 U	10 U	10 U
Dibenz(a,h)anthracene	10	10 U	10 U	10 U	10 U	10 U
Di-n-butylphthalate	10	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	10	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	10	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	10	10 U	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine	20	20 U	20 U	20 U	20 U	20 U
Diethylphthalate	10	10 U	10 U	10 U	10 U	10 U
Dimethylphthalate	10	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene	20	20 U	20 U	20 U	20 U	20 U
2,6-Dinitrotoluene	20	20 U	20 U	20 U	20 U	20 U
Di-n-octylphthalate	10	10 U	10 U	10 U	10 U	10 U
Fluoranthene	10	10 U	10 U	10 U	10 U	10 U
Fluorene	10	10 U	10 U	10 U	10 U	10 U
Hexachlorobenzene	10	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene	10	10 U	10 U	10 U	10 U	10 U
Hexachloroethane	2	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Indeno(1,2,3-cd)pyrene	10	10 U	10 U	10 U	10 U	10 U
Isophorone	10	10 U	10 U	10 U	10 U	10 U
Naphthalene	10	10 U	10 U	10 U	10 U	10 U
Nitrobenzene	10	10 U	10 U	10 U	10 U	10 U
N-Nitrosodi-N-Propylamine	10	10 U	10 U	10 U	10 U	10 U
Phenanthrene	10	10 U	10 U	10 U	10 U	10 U
Pyrene	10	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene	10	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-Methylphenol	10	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol	10	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol	10	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	10	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrophenol	50	50 U	50 U	50 U	50 U	50 U
2-Methyl-4,6-Dinitrophenol	50	50 U	50 U	50 U	50 U	50 U
2-Nitrophenol	50	50 U	50 U	50 U	50 U	50 U
4-Nitrophenol	50	50 U	50 U	50 U	50 U	50 U

TABLE 4.2 - Continued ROBINS AFB ANALYSIS RESULTS

Sample ID	GA EPD	SL9-C-E1	SL10-C-E1	SL11-C-E1	SL12-C-E1	SL13-C-E1
Matrix	NPDES D.L	WATER	WATER	WATER	WATER	WATER
EPA Method 625 - ug/l (cont)						
Pentachlorophenol	20	20 U	20 U	20 U	20 U	20 U
Phenol	10	10 U	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol	10	10 U	10 U	10 U	10 U	10 U
Benzidine		80 U	80 U	80 U	80 U	80 U
EPA Method 610 - ug/l						
Acenapthene	10	10 U	10 U	10 U	10 U	10 U
Acenaphthylene	10	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene	10	10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene	10	10 U	10 U	10 U	10 U	10 U
Benzo(b,k)fluoranthene	10	10 U	10 U	10 U	10 U	10 U
Chrysene + Benzo(a) Anthracene	10	10 U	10 U	10 U	10 U	10 U
Fluoranthene	10	10 U	10 U	10 U	10 U	10 U
Fluorene	10	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene + Dibenz(a,h)anthracene	10	10 U	10 U	10 U	10 U	10 U
Naphthalene	10	10 U	10 U	10 U	10 U	10 U
Phenanthrene + Anthracene	10	10 U	10 U	10 U	10 U	10 U
Pyrene	10	10 U	10 U	10 U	10 U	10 U
1-Methylnaphthalene		10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene		10 U	10 U	10 U	10 U	10 U
EPA Method 608 - ug/l						
Aldrin	0.1	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 U
alpha-BHC	0.1	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 U
beta-BHC	0.1	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 U
gamma-BHC	0.1	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 U
delta-BHC	0.1	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 U
Chlordane	0.5	0.5 UJ	0.5 U	0.5 UJ	0.5 UJ	0.5 U
4,4'-DDD	0.2	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.1 U
4,4'-DDE	0.2	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.1 U
4,4'-DDT	0.2	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.1 U
Dieldrin	0.5	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.1 U
Endosulfan I	0.5	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 U
Endosulfan II	0.5	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.1 U
Endosulfan Sulfate	0.5	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.1 U
Endrin	0.2	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.1 U
Endrin Aldehyde	0.2	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.1 U
Heptachlor	0.1	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 U
Heptachlor Epoxide	0.1	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 U
Methoxychlor	0.3	0.5 UJ	0.5 U	0.5 UJ	0.5 UJ	0.5 U
Toxaphene	2.0	2 UJ	2 U	2 UJ	2 UJ	2 U
Aroclor-1016		1.0 UJ	1.0 U	1.0 UJ	1.0 UJ	1.0 U
Aroclor-1221		1.0 UJ	1.0 U	1.0 UJ	1.0 UJ	1.0 U
Aroclor-1232		1.0 UJ	1.0 U	1.0 UJ	1.0 UJ	1.0 U
Aroclor-1242		1.0 UJ	1.0 U	1.0 UJ	1.0 UJ	1.0 U
Aroclor-1248		1.0 UJ	1.0 U	1.0 UJ	1.0 UJ	1.0 U
Aroclor-1254		1.0 UJ	1.0 U	1.0 UJ	1.0 UJ	1.0 U
Aroclor-1260		1.0 UJ	1.0 U	1.0 UJ	1.0 UJ	1.0 U

TABLE 4.2 - Continued ROBINS AFB ANALYSIS RESULTS

Sample ID Matrix	GA EPD NPDES D.L	SL9-C-E1 WATER	SL10-C-E1 WATER	SL11-C-E1 WATER	SL12-C-E1 WATER	SL13-C-E1 WATER
EPA Method 410.2 - mg/l						
Chemical Oxygen Demand		35 J	20 U	37 J	69 J	28 J
EPA Method 340.2 - mg/l						
Fluoride		0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
EPA Method 405.1 - mg/l						
Biochemical Oxygen Demand		2.0 UJ	2.0 UJ	2.9 J	13 J	2.0 UJ
EPA Method 160.2 - mg/l						
Total Suspended Solids		5.5	5.0 U	75	190	5.0 U
EPA Method 160.1 - mg/l						
Total Dissolved Solids		63	40	56	49	41
Standard Methods 9221-C - col/100mls						
Fecal Coliform		230 J	2.0 UJ	1300 J	70 J	20 J
EPA Method 420.2 - mg/l						
Total Phenolics		0.010 U	0.010 U	0.010 U	0.010 U	0.010 U
EPA Method 200.7 - mg/l						
Cadmium	0.01	##### U	##### U	##### U	0.074	##### U
Chromium	0.01	0.010 U	0.010 U	0.010 U	0.054	0.010 U
Copper	0.02	0.020 U	0.020 U	0.020 U	0.065	0.020 U
Nickel	0.02	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U
Silver	0.01	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U
Zinc	0.02	0.020 U	0.021	0.034	0.270	0.020 U
EPA Method 239.2 - mg/l						
Lead	0.025	##### U	##### U	#####	0.099	##### U
EPA Method 351.2 - mg/l						
Total Kjedahl Nitrogen		0.84 J	0.65 J	0.65 J	1.1 J	0.71 J
EPA Method 350.1 -mg/l						
Ammonia-N		0.12 J	0.15 J	0.26 J	0.13 J	0.084 J
EPA Method 353.2 - mg/l						
Nitrate + Nitrite-N		0.41	0.063	0.078	0.28	0.056
EPA Method 351.2/350.1 - mg/l						
Nitrogen (Organic)		0.72 J	0.50 J	0.39 J	0.97 J	0.63 J
EPA Method 365.4 - mg/l						
Total Phosphorus		0.10 UJ	0.10 UJ	0.15 J	0.16 J	0.10 UJ

Table 4.3

Analytical Results For The Field Test For Free and Total Chlorine Conducted On The Composite Samples Collected During The December 4, 1993 Rain Event

Analyst:	**Alan Bollinger**
Location of Analysis:	**Engineering-Science Field Office, Warner Robins, Georgia**
Date of Analysis:	**December 5, 1993**
Time of Analysis:	**Approximately 11:00 A.M.**

	Analytical Results	
Sample ID	**Free Chlorine**	**Total Chlorine**
RAFB-SL9-C-E1	0.05 mg/l	*
RAFB-SL10-C-E1	0 mg/l	0 mg/l
RAFB-SL11-C-E1	0.04 mg/l	0.04 mg/l
RAFB-SL12-C-E1	0 mg/l	0 mg/l

*Total chlorine analysis was not performed on this composite sample.

The composite samples collected during the November 5 rain event were analyzed for the analytical methods listed in Table 1.2 of this report. As shown in Table 4.1, no analytes were detected in any of the composite samples for the following organic methods of analysis: base/neutrals and acids (EPA 625), polynuclear aromatic hydrocarbons (EPA 610), and organochlorine pesticides and PCBs (EPA 608).

Note in Table 4.1 that the analytical results for the analysis of samples RAFB-SL3-C-E1 and RAFB-SL4-C-E1 by EPA method 608 (organochlorine pesticides and PCBs) were rejected (flagged R) during data validation due to very low surrogate spike percent recoveries in these samples. These analytical results were reported as being below the laboratory reporting limits for all analytes prior to the assignment of the R flags.

Fluoride (EPA 340.2) and residual chlorine (SM408A) were not detected in any of the composite samples. Since the composite samples were analyzed for residual chlorine beyond the holding time limit for this method of analysis, these residual chlorine results may be biased low due to the possible loss of residual chlorine prior to analysis. The analytical results for residual chlorine were nondetect estimates flagged UJ because the holding time limits for this method of analysis was exceeded. Samples RAFB-SL1-C-E1 and RAFB-SL6-C-E1 did not have detectable levels of chemical oxygen demand (EPA 410.2). However, the concentrations for chemical oxygen demand in the seven remaining composite samples were detectable, and they ranged from 20-41 mg/L. Samples RAFB-SL1-C-E1 and RAFB-SL5-C-E1 did not have detectable levels of biochemical oxygen demand (EPA 405.1). However, the concentrations for biochemical oxygen demand in the seven remaining composite samples were detectable, and they ranged from 2.0-3.9 mg/L.

Detectable concentrations of non-filterable residue (total suspended solids, EPA 160.2) were found in samples RAFB-SL2-C-E1 (9.5 mg/L), RAFB-SL3-C-E1 (24 mg/L), RAFB-SL7-C-E1 (12 mg/L), and RAFB-SL8-C-E1 (13 mg/L). Non-filterable residue was not found at detectable concentrations in the remaining five composite samples. Measurable concentrations of filterable residue (total dissolved solids, EPA 160.1) were detected in all nine composite samples, at concentrations ranging from 21 mg/L (sample RAFB-SL2-C-E1) to 79 mg/L (sample RAFB-SL8-C-E1).

Fecal coliform (SM9222-D) was not detected in sample RAFB-SL7-C-E1. However, fecal coliform was found in the remaining eight composite samples at concentrations ranging from 8 J col/100 mls (sample RAFB-SL1-C-E1) to >2000 J col/100 mls (sample RAFB-SL8-C-E1). The analytical results for fecal coliform were flagged J as estimated for positive results, and flagged UJ as nondetect estimates for negative results, due to the fact that the composite samples were analyzed beyond the holding time limit for this method of analysis.

Total recoverable phenolics (EPA 420.2) were found at a detectable concentration in only one sample: sample RAFB-SL5-C-E1 with a concentration of 0.042 mg/L.

No detectable concentrations of cadmium, copper, nickel, and silver (ICP method EPA 200.7) were found in any of the composite samples. Chromium (ICP method EPA

200.7) was found at detectable concentrations in only two samples: sample RAFB-SL3-C-E1 with a concentration of 0.012 mg/L, and sample RAFB-SL7-C-E1 with a concentration of 0.017 mg/L. Zinc (ICP method EPA 200.7) was detected in the following composite samples: RAFB-SL2-C-E1 (0.043 mg/L), RAFB-SL3-C-E1 (0.074 mg/L), RAFB-SL6-C-E1 (0.035 mg/L), RAFB-SL7-C-E1 (0.25 mg/L), RAFB-SL8-C-E1 (0.074 mg/L), and RAFB-SL16-C-E1 (0.038 mg/L). Lead (furnace AA method EPA 239.2) was found at detectable concentrations in only two of the composite samples: sample RAFB-SL3-C-E1 with a concentration of 0.0074 mg/L, and sample RAFB-SL8-C-E1 with a concentration of 0.01 mg/L.

Total Kjeldahl nitrogen (EPA 351.2) was found at detectable concentrations in all nine composite samples; these concentrations ranged from 0.21 mg/L (sample RAFB-SL6-C-E1) to 0.94 mg/L (sample RAFB-SL7-C-E1). Ammonia nitrogen (EPA 350.1) was also found at detectable concentrations in all nine composite samples; these concentrations ranged from 0.058 J mg/L (sample RAFB-SL16-C-E1) to 0.61 J mg/L (sample RAFB-SL7-C-E1). Nitrate-nitrite nitrogen (EPA 353.2) was found at detectable concentrations in all of the composite samples except sample RAFB-SL4-C-E1; these concentrations ranged from 0.078 J mg/L (sample RAFB-SL7-C-E1) to 0.63 J mg/L (sample RAFB-SL8-C-E1). Organic nitrogen (EPA 351.2/EPA 350.1) was found at detectable concentrations in all of the composite samples except sample RAFB-SL1-C-E1 and sample RAFB-SL5-C-E1; these concentrations ranged from 0.13 mg/L (sample RAFB-SL2-C-E1) to 0.4 mg/L (sample RAFB-SL3-C-E1). Finally, total phosphorus (EPA 365.4) was found at detectable concentrations in only two composite samples: sample RAFB-SL2-C-E1 with a concentration of 0.11 mg/L, and sample RAFB-SL8-C-E1 with a concentration of 0.4 mg/L.

Composite sample RAFB-SL16-C-E1 was the field duplicate of composite sample RAFB-SL6-C-E1. Most of the analytical results for these two composite samples agree closely.

The grab samples collected during the December 4 rain event were analyzed for purgeable organics (EPA 624), pH (EPA 150.1), total recoverable oil and grease (EPA 413.2), and total cyanide (EPA 335.3). Total cyanide was not detected in any of the grab samples. The pH values measured at the laboratory for these grab samples ranged from 6.0 to 8.3; these values were flagged J as estimated since these measurements were made beyond the holding time limit for this analytical method. Total recoverable oil and grease was found at a detectable concentration in only one of the five grab samples: samples: sample RAFB-SL12-G-E1 with a concentration of 3.6 mg/L. Grab sample RAFB-SL13-G-E1 was the field duplicate of grab sample RAFB-SL10-G-E1. The total cyanide, pH, and total recoverable oil and grease results for sample RAFB-SL13-G-E1 agree closely with the total cyanide, pH, and total recoverable oil and grease results for sample RAFB-SL10-G-E1.

No purgeable organics (EPA 624) were detected in grab sample RAFB-SL12-G-E1. Sample RAFB-SL9-G-E1 contained the following analytes at detectable concentrations: chloroform (2.4 µg/L) and trichloroethylene (1.0 µg/L). Sample RAFB-SL10-G-E1 contained toluene at 1.1 µg/L. Sample RAFB-SL11-G-E1 contained the following

analytes at detectable concentrations: chlorobenzene (8.9 µg/L), 1,2-Dichlorobenzene (3.1 µg/L), 1,3-Dichlorobenzene (1.0 µg/L), 1,4-Dichlorobenzene (1.4 µg/L), and cis-1,2-dichloroethene (6.1 µg/L). Sample RAFB-SL13-G-E1 contained toluene at 1.5 µg/L. Grab sample RAFB-SL13-G-E1 was the field duplicate of grab sample RAFB-SL10-G-E1; note that the purgeable organics results for these two samples agree closely.

The composite samples collected during the December 4 rain event were analyzed for the analytical methods listed in Table 1.2 of this report. As can be seen among the analytical results given in Table 4.2 for the composite samples, no analytes were detected in any of the composite samples for the following organic methods of analysis: base/neutrals and acids (EPA 625), polynuclear aromatic hydrocarbons (EPA 610), and organochlorine pesticides and PCBs (EPA 608).

Fluoride (EPA 340.2) was not detected in any of the composite samples. Chemical oxygen demand (EPA 410.2) was found at detectable concentrations in all of the composite samples except sample RAFB-SL10-C-E1; these concentrations ranged from 28 J mg/L (sample RAFB-SL13-C-E1) to 69 J mg/L (sample RAFB-SL12-C-E1). Biochemical oxygen demand (EPA 405.1) was found at detectable concentrations in only two composite samples: sample RAFB-SL11-C-E1 (2.9 J mg/L) and sample RAFB-SL12-C-E1 (13 J mg/L). The analytical results for biochemical oxygen demand were flagged J as estimated for positive results, and flagged UJ as nondetected estimated for negative results, due to the fact that the composite samples were analyzed beyond the holding time limit for this method of analysis.

Detectable concentrations of non-filterable residue (total suspended solids, EPA 160.2) were found in the following samples: sample RAFB-SL9-C-E1 (5.5 mg/L), sample RAFB-SL11-C-E1 (75 mg/L), and sample RAFB-SL12-C-E1 (190 mg/L). Non-filterable residue was not found at detectable concentrations in the remaining two composite samples. Measurable concentrations of filterable residue (total dissolved solids, EPA 160.1) were detected in all five composite samples, at concentrations ranging from 40 mg/L (sample RAFB-SL10-C-E1) to 63 mg/L (sample RAFB-SL9-C-E1).

The result for fecal coliform (SM9221-C) in sample RAFB-SL10-C-E1 was given as <2.0 col/100 mls in the laboratory data package for the December 4 rain event (Attachment A); this result is given as 2.0 UJ col/100 mls in Table 4.2. Fecal coliform was found in the remaining four composite samples at concentrations ranging from 20 J col/100 mls (sample RAFB-SL13-C-E1) to 1300 J col/100 mls (sample RAFB-SL11-C-E1). The analytical results for fecal coliform were flagged J as estimated for positive results and flagged UJ as nondetected estimated for negative results, due to the fact that the composite samples were analyzed beyond the holding time limit for this method of analysis.

Total recoverable phenolics (EPA 420.2) were not detected in any of the composite samples.

No detectable concentrations of nickel and silver (ICP method EPA 200.7) were found in any of the composite samples. Cadmium (ICP method EPA 200.7) was found

at a detectable concentration in only one sample: sample RAFB-SL12-C-E1 with a concentration of 0.074 mg/L. Chromium (ICP method EPA 200.7) was found at a detectable concentration in only one sample: sample RAFB-SL12-C-E1 with a concentration of 0.054 mg/L. Copper (ICP method EPA 200.7) was found at a detectable concentration in only one sample: sample RAFB-SL12-C-E1 with a concentration of 0.065 mg/L. Zinc (ICP method EPA 200.7) was found at detectable concentrations in three of the five composite samples: sample RAFB-SL10-C-E1 with a concentration of 0.021 mg/L, sample RAFB-SL11-C-E1 with a concentration of 0.034 mg/L, and sample RAFB-SL12-C-E1 with a concentration of 0.270 mg/L. Lead (furnace AA method EPA 239.2) was found at detectable concentrations in only two of the composite samples: sample RAFB-SL11-C-E1 with a concentration of 0.0057 mg/L, and sample RAFB-SL12-C-E1 with a concentration of 0.099 mg/L.

Total Kjeldahl nitrogen (EPA 351.2) was found at detectable concentrations in all five composite samples; these concentrations ranged from 0.65 J mg/L (samples RAFB-SL10-C-E1 and RAFB-SL11-C-E1) to 1.1 J mg/L (sample RAFB-SL12-C-E1). Ammonia nitrogen (EPA 350.1) was also found at detectable concentrations in all five composite samples; these concentrations ranged from 0.084 J mg/L (sample RAFB-SL13-C-E1) to 0.26 J mg/L (sample RAFB-SL11-C-E1). Nitrate-nitrite nitrogen (EPA 353.2) was found at detectable concentrations in all five composite samples; these concentrations ranged from 0.056 mg/L (sample RAFB-SL13-C-E1) to 0.41 mg/L (sample RAFB-SL9-C-E1). Organic nitrogen (EPA 351.2/EPA 350.1) was found at detectable concentrations in all five composite samples; these concentrations ranged from 0.39 J mg/L (sample RAFB-SL11-C-E1) to 0.97 J mg/L (sample RAFB-SL12-C-E1). Finally, total phosphorus (EPA 365.4) was found at detectable concentrations in only two of the five composite samples: sample RAFB-SL11-C-E1 with a concentration of 0.15 J mg/L, and sample RAFB-SL12-C-E1 with a concentration of 0.16 J mg/L.

Composite sample RAFB-SL13-C-E1 was the field duplicate of composite sample RAFB-SL10-C-E1. The analytical results for sample RAFB-SL13-C-E1 agree closely with the results for sample RAFB-SL10-C-E1.

Table 4.3 presents the analytical results of the field test for free and total chlorine that was performed on several of the composite samples collected during the December 4 rain event. The free chlorine test revealed the presence of detectable concentrations of free chlorine in composite sample RAFB-SL9-C-E1 (0.05 mg/L) and in composite sample RAFB-SL11-C-E1 (0.04 mg/L). The total chlorine test revealed a detectable concentration of total chlorine in sample RAFB-SL11-C-E1 (0.04 mg/L). As indicated earlier in this section, residual chlorine (SM408A) was not found at detectable concentrations in any of the composite samples collected during the November 5 rain event. The residual chlorine results of this rain event, however, may not be directly comparable with the free and total chlorine results of the December 4 rain event, because the analysis for residual chlorine conducted on the samples of the November 5 rain event occurred beyond the holding time limit for this method (the residual chlorine results for the samples collected during the November 5 rain event may be biased low due to the possible loss of residual chlorine prior to analysis).

Tables 4.4 through 4.15 summarize the analytical results of the sampling program by drainage area. Each table lists only the parameters detected and the corresponding values at the sampling location.

Table 4.4 Drainage Area 2, Sampling Location SW-12
Summary of Parameters Detected In Storm Water
December 4, 1993

Parameter	Units	Sample Type[1]	Measurement[2]
pH	--	G	8.3J
Oil and Grease	mg/L	G	3.6
Chemical Oxygen Demand	mg/L	C	69J
Biochemical Oxygen Demand	mg/L	C	13J
Total Suspended Solids	mg/L	C	190
Total Dissolved Solids	mg/L	C	49
Fecal Coliform	col/100 mL	C	70J
Cadmium	mg/L	C	0.074
Chromium	mg/L	C	0.054
Copper	mg/L	C	0.065
Zinc	mg/L	C	0.270
Lead	mg/L	C	0.099
Total Kjeldahl Nitrogen	mg/L	C	1.1J
Ammonia-N	mg/L	C	0.13J
Nitrate-N + Nitrite-N	mg/L	C	0.28
Nitrogen (Organic)	mg/L	C	0.97
Total Phosphorous	mg/L	C	0.16J

(1) G - grab
C - time-weighted composite
(2) J - estimated

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Table 4.5 Drainage Area 3, Sampling Location SW-11
Summary of Parameters Detected In Storm Water
December 4, 1993

Parameter	Units	Sample Type[1]	Measurement[2]
Chlorobenzene	µg/L	G	8.9
1,2-Dichlorobenzene	µg/L	G	3.1
1,3-Dichlorobenzene	µg/L	G	1.0
1,4-Dichlorobenzene	µg/L	G	1.4
Cis-1,2-dichloroethene	µg/L	G	6.1
pH	--	G	6.1
Chemical Oxygen Demand	mg/L	C	37J
Biochemical Oxygen Demand	mg/L	C	2.9J
Total Suspended Solids	mg/L	C	75
Total Dissolved Solids	mg/L	C	56
Fecal Coliform	col/100 mL	C	1300J
Zinc	mg/L	C	0.034
Lead	mg/L	C	0.0057
Total Kjeldahl Nitrogen	mg/L	C	0.65
Ammonia-N	mg/L	C	0.26J
Nitrate-N + Nitrite-N	mg/L	C	0.078
Nitrogen (Organic)	mg/L	C	0.39J
Total Phosphorous	mg/L	C	0.15J

(1) G - grab
C - time-weighted composite
(2) J - estimated

Table 4.6 Drainage Area 4, Sampling Location SW-10
Summary of Parameters Detected In Storm Water
December 4, 1993

Parameter	Units	Sample Type[1]	Measurement[2]	Field Duplicate[2]
Toluene	µg/L	G	1.1	1.5
pH	--	G	6.4J	6.3J
Chemical Oxygen Demand	mg/L	C	20U	28J
Total Dissolved Solids	mg/L	C	40	41
Fecal Coliform	col/100 mL	C	2.0UJ	20J
Zinc	mg/L	C	0.021	0.020U
Total Kjeldahl Nitrogen	mg/L	C	0.65J	0.71J
Ammonia-N	mg/L	C	0.15J	0.084J
Nitrate-N + Nitrite-N	mg/L	C	0.063	0.056
Nitrogen (Organic)	mg/L	C	0.50J	0.63J

(1) G - grab
C - time-weighted composite
(2) J - estimated
U - below detection limit

Table 4.7 Drainage Area 6, Sampling Location SW-9
Summary of Parameters Detected In Storm Water
December 4, 1993

Parameter	Units	Sample Type[1]	Measurement[2]
Chloroform	µg/L	G	2.4
Trichloroethylene	µg/L	G	1.0
pH	--	G	6.0J
Chemical Oxygen Demand	mg/L	C	35J
Total Suspended Solids	mg/L	C	5.5
Total Dissolved Solids	mg/L	C	63
Fecal Coliform	col/100 mL	C	230J
Total Kjeldahl Nitrogen	mg/L	C	0.84J
Ammonia-N	mg/L	C	0.12J
Nitrate-N + Nitrite-N	mg/L	C	0.41
Nitrogen (Organic)	mg/L	C	0.72J

(1) G - grab
C - time-weighted composite
(2) J - estimated

Table 4.8 Drainage Area 7, Sampling Location SW-8
Summary of Parameters Detected In Storm Water
November 5, 1993

Parameter	Units	Sample Type[1]	Measurement[2]
Chlorobenzene	µg/L	G	4J
Cis-1,2-dichloroethene	µg/L	G	3
Trichloroethylene	µg/L	G	20
Trichlorofluoromethane	µg/L	G	1.1
pH	--	G	6.6
Chemical Oxygen Demand	mg/L	C	41
Biochemical Oxygen Demand	mg/L	C	2.3
Total Suspended Solids	mg/L	C	13
Total Dissolved Solids	mg/L	C	79
Fecal Coliform	col/100 mL	C	>2000J
Zinc	mg/L	C	0.074
Lead	mg/L	C	0.01
Total Kjeldahl Nitrogen	mg/L	C	0.55
Ammonia-N	mg/L	C	0.31J
Nitrate-N + Nitrite-N	mg/L	C	0.63J
Nitrogen (Organic)	mg/L	C	0.24
Total Phosphorous	mg/L	C	0.4

(1) G - grab
C - time-weighted composite
(2) J - estimated

Table 4.9 Drainage Area 8, Sampling Location SW-7
Summary of Parameters Detected In Storm Water
November 5, 1993

Parameter	Units	Sample Type[1]	Measurement[2]
Chlorobenzene	µg/L	G	2J
pH	--	G	5.9J
Chemical Oxygen Demand	mg/L	C	39
Biochemical Oxygen Demand	mg/L	C	2.5
Total Suspended Solids	mg/L	C	12
Total Dissolved Solids	mg/L	C	47
Chromium	mg/L	C	0.017
Zinc	mg/L	C	0.25
Total Kjeldahl Nitrogen	mg/L	C	0.94
Ammonia-N	mg/L	C	0.61J
Nitrate + Nitrite-N	mg/L	C	0.078J
Nitrogen (Organic)	mg/L	C	0.33

(1) G - grab
C - time-weighted composite
(2) J - estimated

Table 4.10 Drainage Area 9, Sampling Location SW-6
Summary of Parameters Detected In Storm Water
November 5, 1993

Parameter	Units	Sample Type[1]	Measurement[2]	Field Duplicate[2]
Benzene	µg/L	C	1.5J	4.8J
Chlorobenzene	µg/L	C	8.7J	1U
Ethylbenzene	µg/L	C	1U	6.3J
Methylene chloride	µg/L	G	1U	1U
Toluene	µg/L	C	1.2J	19J
Xylene	µg/L	C	1U	33
pH	--	G	6.8	6.8
Oil and Grease	mg/L	G	20	26
Chemical Oxygen Demand	mg/L	C	20U	27
Biochemical Oxygen Demand	mg/L	C	2.3	2
Total Dissolved Solids	mg/L	C	22	24
Fecal Coliform	col/100 mL	C	28J	69J
Zinc	mg/L	C	0.035	0.038
Total Kjeldahl Nitrogen	mg/L	C	0.21	0.24
Ammonia-N	mg/L	C	0.059J	0.058J
Nitrate-N + Nitrite-N	mg/L	C	0.14J	0.16J
Nitrogen (Organic)	mg/L	C	0.15	0.18

(1) G - grab
C - time-weighted composite

(2) J - estimated
U - below detection limit

Table 4.11 Drainage Area 10, Sampling Location SW-5
Summary of Parameters Detected In Storm Water
November 5, 1993

Parameter	Units	Sample Type[1]	Measurement[2]
pH	--	G	6.5
Oil and Grease	mg/L	G	2.3
Chemical Oxygen Demand	mg/L	C	20
Total Dissolved Solids	mg/L	C	28
Fecal Coliform	col/100 mL	C	10J
Total Recoverable Phenolics	mg/L	C	0.042
Total Kjeldahl Nitrogen	mg/L	C	0.53
Ammonia-N	mg/L	C	0.59J
Nitrate + Nitrite-N	mg/L	C	0.14J

(1) G - grab
C - time-weighted composite
(2) J - estimated

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Table 4.12 Drainage Area 11, Sampling Location SW-4
Summary of Parameters Detected In Storm Water
November 5, 1993

Parameter	Units	Sample Type[1]	Measurement[2]
pH	--	G	6.2J
Chemical Oxygen Demand	mg/L	C	36
Biochemical Oxygen Demand	mg/L	C	2.1
Total Dissolved Solids	mg/L	C	43
Fecal Coliform	col/100 mL	C	20J
Total Kjeldahl Nitrogen	mg/L	C	0.81
Ammonia-N	mg/L	C	0.49
Nitrogen (Organic)	mg/L	C	0.32

(1) G - grab
C - time-weighted composite
(2) J - estimated

**Table 4.13 Drainage Area 14, Sampling Location SW-3
Summary of Parameters Detected In Storm Water
November 5, 1993**

Parameter	Units	Sample Type[1]	Measurement[2]
pH	--	G	6.5J
Chemical Oxygen Demand	mg/L	C	25
Biochemical Oxygen Demand	mg/L	C	3.9
Total Suspended Solids	mg/L	C	24
Total Dissolved Solids	mg/L	C	37
Fecal Coliform	col/100 mL	C	160J
Zinc	mg/L	C	0.074
Lead	mg/L	C	0.0074
Total Kjeldahl Nitrogen	mg/L	C	0.48
Ammonia-N	mg/L	C	0.079J
Nitrate + Nitrite-N	mg/L	C	0.37J
Nitrogen (Organic)	mg/L	C	0.4

(1) G - grab
C - time-weighted composite
(2) J - estimated

Table 4.14 Drainage Area 15, Sampling Location SW-1
Summary of Parameters Detected In Storm Water
November 5, 1993

Parameter	Units	Sample Type[1]	Measurement[2]
Benzene	μg/L	G	24J
Ethylbenzene	μg/L	G	1.4J
Toluene	μg/L	G	1.3J
pH	--	G	6.2J
Total Dissolved Solids	mg/L	C	34
Fecal Coliform	col/100 mL	C	8J
Total Kjeldahl Nitrogen	mg/L	C	0.26
Ammonia-N	mg/L	C	0.22J
Nitrate + Nitrite-N	mg/L	C	0.16J

(1) G - grab
C - time-weighted composite
(2) J - estimated

Table 4.15 Drainage Area 16, Sampling Location SW-2
Summary of Parameters Detected In Storm Water
November 5, 1993

Parameter	Units	Sample Type[1]	Measurement[2]
pH	--	G	6.5J
Oil and Grease	mg/L	G	2.8
Chemical Oxygen Demand	mg/L	C	23
Biochemical Oxygen Demand	mg/L	C	2
Total Suspended Solids	mg/L	C	9.5
Total Dissolved Solids	mg/L	C	21
Fecal Coliform	col/100 mL	C	150J
Zinc	mg/L	C	0.043
Total Kjeldahl Nitrogen	mg/L	C	0.37
Ammonia-N	mg/L	C	0.24J
Nitrate + Nitrite-N	mg/L	C	0.17J
Nitrogen (Organic)	mg/L	C	0.13
Total Phosphorous	mg/L	C	0.11

(1) G - grab
C - time-weighted composite
(2) J - estimated

ATTACHMENT A
LABORATORY DATA PACKAGES FOR THE
NOVEMBER-DECEMBER 1993 STORM
WATER SAMPLING EFFORT
ROBINS AFB, GEORGIA

LABORATORY DATA PACKAGE FOR THE NOVEMBER 5, 1993 RAIN EVENT

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S3-46283

Received: 06 NOV 93

Mr. John Schendel
Engineering Science, Inc.
57 Executive Park South, Suite 500
Atlanta, Georgia 30329

CC: Alan Bollinger

Project: AA002.03 Robins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46283-1	RAFB-SL1-G-E1	11-05-93
46283-2	RAFB-SL2-G-E1	11-05-93
46283-3	RAFB-SL3-G-E1	11-05-93
46283-4	RAFB-SL4-G-E1	11-05-93
46283-5	RAFB-SL5-G-E1	11-05-93

PARAMETER	46283-1	46283-2	46283-3	46283-4	46283-5
Purgeables (624)					
Benzene, ug/l	24	<1.0	<1.0	<1.0	<1.0
Bromodichloromethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Bromoform, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Bromomethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Carbon Tetrachloride, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Chlorobenzene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
2-Chloroethylvinyl Ether, ug/l	<10	<10	<10	<10	<10
Chloroform, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Chloromethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Dibromochloromethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Trans-1,2-Dichloroethene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Cis-1,2-Dichloroethene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0

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LOG NO: S3-46283

Received: 06 NOV 93

Mr. John Schendel
Engineering Science, Inc.
57 Executive Park South, Suite 500
Atlanta, Georgia 30329

CC: Alan Bollinger

Project: AA002.03 Robins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46283-1	RAFB-SL1-G-E1	11-05-93
46283-2	RAFB-SL2-G-E1	11-05-93
46283-3	RAFB-SL3-G-E1	11-05-93
46283-4	RAFB-SL4-G-E1	11-05-93
46283-5	RAFB-SL5-G-E1	11-05-93

PARAMETER	46283-1	46283-2	46283-3	46283-4	46283-5
1,2-Dichloropropane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Cis-1,3-Dichloropropene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Trans-1,3-Dichloropropene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene, ug/l	1.4	<1.0	<1.0	<1.0	<1.0
Methylene Chloride, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Tetrachloroethene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene, ug/l	1.3	<1.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethylene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Trichlorofluoromethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Xylenes, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Acrolein, ug/l	<50	<50	<50	<50	<50
Acrylonitrile, ug/l	<50	<50	<50	<50	<50
Surrogate - Toluene-d8	99 %	101 %	96 %	96 %	96 %
Surrogate - 4-Bromofluorobenzene	114 %	94 %	94 %	95 %	94 %
Surrogate - 1,2-Dichloroethane-d4	108 %	119 %	106 %	115 %	122 %
Date Analyzed	11.16.93	11.16.93	11.16.93	11.16.93	11.16.93

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LOG NO: S3-46283

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Project: AA002.03 Robins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46283-1	RAFB-SL1-G-E1	11-05-93
46283-2	RAFB-SL2-G-E1	11-05-93
46283-3	RAFB-SL3-G-E1	11-05-93
46283-4	RAFB-SL4-G-E1	11-05-93
46283-5	RAFB-SL5-G-E1	11-05-93

PARAMETER	46283-1	46283-2	46283-3	46283-4	46283-5
Cyanide (335.3)					
Cyanide (335.3), mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
Date Analyzed	11.11.93	11.11.93	11.11.93	11.11.93	11.11.93
pH (150.1)					
pH, units	6.2	6.5	6.5	6.2	6.5
Date Analyzed	11.07.93	11.07.93	11.07.93	11.07.93	11.07.93
Oil & Grease					
Oil & Grease (413.2), mg/l	<1.0	2.8	<1.0	<1.0	2.3
Date Analyzed	11.18.93	11.18.93	11.18.93	11.18.93	11.18.93

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LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46283-6	RAFB-SL6-G-E1	11-05-93
46283-7	RAFB-SL7-G-E1	11-05-93
46283-8	RAFB-SL8-G-E1	11-05-93
46283-9	RAFB-SL16-G-E1	11-05-93

PARAMETER	46283-6	46283-7	46283-8	46283-9
Purgeables (624)				
Benzene, ug/l	1.5	<1.0	<1.0	4.8
Bromodichloromethane, ug/l	<1.0	<1.0	<1.0	<1.0
Bromoform, ug/l	<1.0	<1.0	<1.0	<1.0
Bromomethane, ug/l	<1.0	<1.0	<1.0	<1.0
Carbon Tetrachloride, ug/l	<1.0	<1.0	<1.0	<1.0
Chlorobenzene, ug/l	8.7	2.0	4.0	<1.0
Chloroethane, ug/l	<1.0	<1.0	<1.0	<1.0
2-Chloroethylvinyl Ether, ug/l	<10	<10	<10	<10
Chloroform, ug/l	<1.0	<1.0	<1.0	<1.0
Chloromethane, ug/l	<1.0	<1.0	<1.0	<1.0
Dibromochloromethane, ug/l	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene, ug/l	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene, ug/l	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene, ug/l	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane, ug/l	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane, ug/l	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene, ug/l	<1.0	<1.0	<1.0	<1.0
Trans-1,2-Dichloroethene, ug/l	<1.0	<1.0	<1.0	<1.0
Cis-1,2-Dichloroethene, ug/l	<1.0	<1.0	3.0	<1.0
1,2-Dichloropropane, ug/l	<1.0	<1.0	<1.0	<1.0

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46283-6	RAFB-SL6-G-E1	11-05-93
46283-7	RAFB-SL7-G-E1	11-05-93
46283-8	RAFB-SL8-G-E1	11-05-93
46283-9	RAFB-SL16-G-E1	11-05-93

PARAMETER	46283-6	46283-7	46283-8	46283-9
Cis-1,3-Dichloropropene, ug/l	<1.0	<1.0	<1.0	<1.0
Trans-1,3-Dichloropropene, ug/l	<1.0	<1.0	<1.0	<1.0
Ethylbenzene, ug/l	<1.0	<1.0	<1.0	6.3
Methylene Chloride, ug/l	<1.0	<1.0	<1.0	1.0
1,1,2,2-Tetrachloroethane, ug/l	<1.0	<1.0	<1.0	<1.0
Tetrachloroethene, ug/l	<1.0	<1.0	<1.0	<1.0
Toluene, ug/l	1.2	<1.0	<1.0	19
1,1,1-Trichloroethane, ug/l	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane, ug/l	<1.0	<1.0	<1.0	<1.0
Trichloroethylene, ug/l	<1.0	<1.0	20	<1.0
Trichlorofluoromethane, ug/l	<1.0	<1.0	1.1	<1.0
Vinyl Chloride, ug/l	<1.0	<1.0	<1.0	<1.0
Xylenes, ug/l	<1.0	<1.0	<1.0	33
Acrolein, ug/l	<50	<50	<50	<50
Acrylonitrile, ug/l	<50	<50	<50	<50
Surrogate - Toluene-d8	99 %	103 %	93 %	108 %
Surrogate - 4-Bromofluorobenzene	90 %	96 %	100 %	89 %
Surrogate - 1,2-Dichloroethane-d4	104 %	103 %	99 %	97 %
Date Analyzed	11.16.93	11.16.93	11.19.93	11.19.93
Cyanide (335.3)				
Cyanide (335.3), mg/l	<0.010	<0.010	<0.010	<0.010
Date Analyzed	11.11.93	11.11.93	11.11.93	11.11.93

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Project: AA002.03 Robins AFB
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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46283-6	RAFB-SL6-G-E1	11-05-93
46283-7	RAFB-SL7-G-E1	11-05-93
46283-8	RAFB-SL8-G-E1	11-05-93
46283-9	RAFB-SL16-G-E1	11-05-93

PARAMETER	46283-6	46283-7	46283-8	46283-9
pH (150.1)				
pH, units	6.8	5.9	6.6	6.8
Date Analyzed	11.07.93	11.07.93	11.07.93	11.07.93
Oil & Grease				
Oil & Grease (413.2), mg/l	20	<1.0	<1.0	26
Date Analyzed	11.18.93	11.18.93	11.18.93	11.18.93

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46283-10	RAFB-SL1-C-E1	11-05-93
46283-11	RAFB-SL2-C-E1	11-05-93
46283-12	RAFB-SL3-C-E1	11-05-93
46283-13	RAFB-SL4-C-E1	11-05-93
46283-14	RAFB-SL5-C-E1	11-05-93

PARAMETER	46283-10	46283-11	46283-12	46283-13	46283-14
Chemical Oxygen Demand (410.2)					
Chemical Oxygen Demand, mg/l	<20	23	25	36	20
Date Analyzed	11.09.93	11.09.93	11.09.93	11.09.93	11.09.93
Fluoride (340.2)					
Fluoride, mg/l	<0.20	<0.20	<0.20	<0.20	<0.20
Date Analyzed	11.16.93	11.16.93	11.16.93	11.16.93	11.16.93
Residual Chloride					
Residual Chlorine, mg/l	<1.0	<1.0	<1.0	<1.0	<1.0
Date Analyzed	11.09.93	11.09.93	11.09.93	11.09.93	11.09.93
Biochemical Oxygen Demand (5-Day) (405.1)					
Biochemical Oxygen Demand (5 Day), mg/l	<2.0	2.0	3.9	2.1	<2.0
Date Analyzed	11.07.93	11.07.93	11.07.93	11.07.93	11.07.93
Suspended Solids (160.2)					
Suspended Solids (160.2), mg/l	<5.0	9.5	24	<5.0	<5.0
Date Analyzed	11.08.93	11.08.93	11.08.93	11.08.93	11.08.93
Total Dissolved Solids (160.1)					
Total Dissolved Solids, mg/l	34	21	37	43	28
Date Analyzed	11.08.93	11.10.93	11.08.93	11.08.93	11.08.93

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46283-10	RAFB-SL1-C-E1	11-05-93
46283-11	RAFB-SL2-C-E1	11-05-93
46283-12	RAFB-SL3-C-E1	11-05-93
46283-13	RAFB-SL4-C-E1	11-05-93
46283-14	RAFB-SL5-C-E1	11-05-93

PARAMETER	46283-10	46283-11	46283-12	46283-13	46283-14
Fecal Coliform (MF)					
Fecal Coliform, col/100mls	8.0*F8	150*F8	160*F8	20*F8	10*F8
Date Analyzed	11.08.93	11.08.93	11.08.93	11.08.93	11.08.93
Phenolics, Total Recoverable					
Phenolics,Total Recoverable, mg/l	<0.010	<0.010	<0.010	<0.010	0.042
Date Analyzed	11.23.93	11.23.93	11.23.93	11.21.93	11.21.93
Cadmium (200.7)					
Cadmium (200.7), mg/l	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Date Analyzed	11.23.93	11.23.93	11.23.93	11.23.93	11.23.93
Chromium (200.7)					
Chromium (200.7), mg/l	<0.010	<0.010	0.012	<0.010	<0.010
Date Analyzed	11.23.93	11.23.93	11.23.93	11.23.93	11.23.93
Copper (200.7)					
Copper (200.7), mg/l	<0.020	<0.020	<0.020	<0.020	<0.020
Date Analyzed	11.23.93	11.23.93	11.23.93	11.23.93	11.23.93
Nickel (200.7)					
Nickel (200.7), mg/l	<0.020	<0.020	<0.020	<0.020	<0.020
Date Analyzed	11.23.93	11.23.93	11.23.93	11.23.93	11.23.93
Silver (200.7)					
Silver (200.7), mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
Date Analyzed	11.23.93	11.23.93	11.23.93	11.23.93	11.23.93

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46283-10	RAFB-SL1-C-E1	11-05-93
46283-11	RAFB-SL2-C-E1	11-05-93
46283-12	RAFB-SL3-C-E1	11-05-93
46283-13	RAFB-SL4-C-E1	11-05-93
46283-14	RAFB-SL5-C-E1	11-05-93

PARAMETER	46283-10	46283-11	46283-12	46283-13	46283-14
Zinc (200.7)					
Zinc (200.7), mg/l	<0.020	0.043	0.074	<0.020	<0.020
Date Analyzed	11.23.93	11.23.93	11.23.93	11.23.93	11.23.93
Lead (239.2)					
Lead (239.2), mg/l	<0.0050	<0.0050	0.0074	<0.0050	<0.0050
Date Analyzed	11.11.93	11.11.93	11.11.93	11.11.93	11.11.93
Total Kjeldahl Nitrogen (351.2)					
Total Kjeldahl Nitrogen-N, mg/l	0.26	0.37	0.48	0.81	0.53
Date Analyzed	11.19.93	11.19.93	11.19.93	11.19.93	12.03.93
Ammonia-N (350.1)					
Ammonia-N, mg/l	0.22	0.24	0.079	0.49	0.59
Date Analyzed	11.22.93	11.22.93	11.22.93	11.22.93	11.22.93
Nitrate + Nitrite-N (353.2)					
Nitrate + Nitrite-N, mg/l	0.16	0.17	0.37	<0.050	0.14
Date Analyzed	11.10.93	11.10.93	11.10.93	11.10.93	11.10.93
Nitrogen (Organic) (351.2/350.1)					
Nitrogen(Organic) (351.2/350.1), mg/l	<0.070	0.13	0.40	0.32	<0.070
Date Analyzed	11.22.93	11.22.93	11.22.93	11.22.93	12.03.93
Total Phosphorous (365.4)					
Total Phosphorus (365.4), mg/l	<0.10	0.11	<0.10	<0.10	<0.10
Date Analyzed	11.19.93	11.19.93	11.19.93	11.19.93	11.19.93

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SL *SAVANNAH LABORATORIES*
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S3-46283

Received: 06 NOV 93

Mr. John Schendel
Engineering Science, Inc.
57 Executive Park South, Suite 500
Atlanta, Georgia 30329

CC: Alan Bollinger

Project: AA002.03 Robins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46283-10	RAFB-SL1-C-E1	11-05-93
46283-11	RAFB-SL2-C-E1	11-05-93
46283-12	RAFB-SL3-C-E1	11-05-93
46283-13	RAFB-SL4-C-E1	11-05-93
46283-14	RAFB-SL5-C-E1	11-05-93

PARAMETER	46283-10	46283-11	46283-12	46283-13	46283-14
BN-A Extractables (625)					
Acenaphthene, ug/l	<10	<10	<10	<10	<10
Acenaphthylene, ug/l	<10	<10	<10	<10	<10
Anthracene, ug/l	<10	<10	<10	<10	<10
Benzo(a)Anthracene, ug/l	<10	<10	<10	<10	<10
Benzo(b)fluoranthene, ug/l	<10	<10	<10	<10	<10
Benzo(k)fluoranthene, ug/l	<10	<10	<10	<10	<10
Benzo(a)pyrene, ug/l	<10	<10	<10	<10	<10
Benzo(g,h,i)perylene, ug/l	<10	<10	<10	<10	<10
Benzyl butyl phthalate, ug/l	<10	<10	<10	<10	<10
bis(2-Chloroethyl)ether, ug/l	<10	<10	<10	<10	<10
bis(2-Chloroethoxy)methane, ug/l	<10	<10	<10	<10	<10
bis(2-Ethylhexyl)phthalate, ug/l	<10	<10	<10	<10	<10
Bis(2-chloroisopropyl)ether, ug/l	<10	<10	<10	<10	<10
4-Bromophenyl-phenyl-ether, ug/l	<10	<10	<10	<10	<10
2-Chloronaphthalene, ug/l	<10	<10	<10	<10	<10
4-Chlorophenyl-phenyl ether, ug/l	<10	<10	<10	<10	<10
Chrysene, ug/l	<10	<10	<10	<10	<10
Dibenz(a,h)anthracene, ug/l	<10	<10	<10	<10	<10
Di-n-butylphthalate, ug/l	<10	<10	<10	<10	<10

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LOG NO: S3-46283
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REPORT OF RESULTS

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46283-11	RAFB-SL2-C-E1	11-05-93
46283-12	RAFB-SL3-C-E1	11-05-93
46283-13	RAFB-SL4-C-E1	11-05-93
46283-14	RAFB-SL5-C-E1	11-05-93

PARAMETER	46283-10	46283-11	46283-12	46283-13	46283-14
1,3-Dichlorobenzene, ug/l	<10	<10	<10	<10	<10
1,2-Dichlorobenzene, ug/l	<10	<10	<10	<10	<10
1,4-Dichlorobenzene, ug/l	<10	<10	<10	<10	<10
3,3'-Dichlorobenzidine, ug/l	<20	<20	<20	<20	<20
Diethylphthalate, ug/l	<10	<10	<10	<10	<10
Dimethylphthalate, ug/l	<10	<10	<10	<10	<10
2,4-Dinitrotoluene, ug/l	<20	<20	<20	<20	<20
2,6-Dinitrotoluene, ug/l	<20	<20	<20	<20	<20
Di-n-octylphthalate, ug/l	<10	<10	<10	<10	<10
Fluoranthene, ug/l	<10	<10	<10	<10	<10
Fluorene, ug/l	<10	<10	<10	<10	<10
Hexachlorobenzene, ug/l	<10	<10	<10	<10	<10
Hexachlorobutadiene, ug/l	<10	<10	<10	<10	<10
Hexachloroethane, ug/l	<2.0	<2.0	<2.0	<2.0	<2.0
Indeno(1,2,3-cd)pyrene, ug/l	<10	<10	<10	<10	<10
Isophorone, ug/l	<10	<10	<10	<10	<10
Naphthalene, ug/l	<10	<10	<10	<10	<10
Nitrobenzene, ug/l	<10	<10	<10	<10	<10
N-Nitrosodi-N-Propylamine, ug/l	<10	<10	<10	<10	<10
Phenanthrene, ug/l	<10	<10	<10	<10	<10

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LOG NO: S3-46283
Rev-2 12/16/93
Received: 06 NOV 93

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Project: AA002.03 Robins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46283-10	RAFB-SL1-C-E1	11-05-93
46283-11	RAFB-SL2-C-E1	11-05-93
46283-12	RAFB-SL3-C-E1	11-05-93
46283-13	RAFB-SL4-C-E1	11-05-93
46283-14	RAFB-SL5-C-E1	11-05-93

PARAMETER	46283-10	46283-11	46283-12	46283-13	46283-14
Pyrene, ug/l	<10	<10	<10	<10	<10
1,2,4-Trichlorobenzene, ug/l	<10	<10	<10	<10	<10
4-Chloro-3-methylphenol, ug/l	<10	<10	<10	<10	<10
2-Chlorophenol, ug/l	<10	<10	<10	<10	<10
2,4-Dichlorophenol, ug/l	<10	<10	<10	<10	<10
2,4-Dimethylphenol, ug/l	<10	<10	<10	<10	<10
2,4-Dinitrophenol, ug/l	<50	<50	<50	<50	<50
2-Methyl-4,6-dinitrophenol, ug/l	<50	<50	<50	<50	<50
2-Nitrophenol, ug/l	<10	<10	<10	<10	<10
4-Nitrophenol, ug/l	<50	<50	<50	<50	<50
Pentachlorophenol, ug/l	<20	<20	<20	<20	<20
Phenol, ug/l	<10	<10	<10	<10	<10
2,4,6-Trichlorophenol, ug/l	<10	<10	<10	<10	<10
Surrogate-PHL	79 %	75 %	64 %	70 %	74 %
Surrogate-2FP	77 %	73 %	58 %	68 %	69 %
Surrogate-TBP	96 %	90 %	90 %	79 %	94 %
Surrogate-NBZ	85 %	84 %	65 %	78 %	79 %
Surrogate-2FBP	89 %	85 %	68 %	81 %	82 %
Surrogate-TPH	91 %	72 %	59 %	62 %	68 %
Date Extracted	11.11.93	11.11.93	11.11.93	11.11.93	11.11.93
Date Analyzed	11.17.93	11.17.93	11.17.93	11.17.93	11.17.93

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46283-12	RAFB-SL3-C-E1	11-05-93
46283-13	RAFB-SL4-C-E1	11-05-93
46283-14	RAFB-SL5-C-E1	11-05-93

PARAMETER	46283-10	46283-11	46283-12	46283-13	46283-14
Polynuclear Aromatics (610)					
Acenaphthene, ug/l	<10	<10	<10	<10	<10
Acenaphthylene, ug/l	<10	<10	<10	<10	<10
Benzo(a)pyrene, ug/l	<10	<10	<10	<10	<10
Benzo(g,h,i)perylene, ug/l	<10	<10	<10	<10	<10
Benzo(b,k)fluoranthene, ug/l	<10	<10	<10	<10	<10
Chrysene + Benzo(a)anthracene, ug/l	<10	<10	<10	<10	<10
Fluoranthene, ug/l	<10	<10	<10	<10	<10
Fluorene, ug/l	<10	<10	<10	<10	<10
Indeno(1,2,3-cd)pyrene+Dibe nzo(a,h)anthracene, ug/l	<10	<10	<10	<10	<10
Naphthalene, ug/l	<10	<10	<10	<10	<10
Phenanthrene + Anthracene, ug/l	<10	<10	<10	<10	<10
Pyrene, ug/l	<10	<10	<10	<10	<10
1-Methylnaphthalene, ug/l	<10	<10	<10	<10	<10
2-Methylnaphthalene, ug/l	<10	<10	<10	<10	<10
Surrogate - 2-Fluorobiphenyl	28.4	28.2	22.6	26.1	37.8
Surrogate - Expected Value, ug/l	50	50	50	50	50
Surrogate - % Actual Recovery	57 %	56 %	45 %	52 %	76 %
Surrogate - Control Limit	27-123 %	27-123 %	27-123 %	27-123 %	27-123 %
Date Extracted	11.11.93	11.11.93	11.11.93	11.11.93	11.11.93
Date Analyzed	11.15.93	11.15.93	11.15.93	11.15.93	11.15.93

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46283-12	RAFB-SL3-C-E1	11-05-93
46283-13	RAFB-SL4-C-E1	11-05-93
46283-14	RAFB-SL5-C-E1	11-05-93

PARAMETER	46283-10	46283-11	46283-12	46283-13	46283-14
Cl-Pesticides/PCB (608)					
Aldrin, ug/l	<0.050	<0.050	<0.050	<0.050	<0.050
alpha-BHC, ug/l	<0.050	<0.050	<0.050	<0.050	<0.050
beta-BHC, ug/l	<0.050	<0.050	<0.050	<0.050	<0.050
gamma-BHC, ug/l	<0.050	<0.050	<0.050	<0.050	<0.050
delta-BHC, ug/l	<0.050	<0.050	<0.050	<0.050	<0.050
Chlordane, ug/l	<0.50	<0.50	<0.50	<0.50	<0.50
4,4'-DDD, ug/l	<0.10	<0.10	<0.10	<0.10	<0.10
4,4'-DDE, ug/l	<0.10	<0.10	<0.10	<0.10	<0.10
4,4'-DDT, ug/l	<0.10	<0.10	<0.10	<0.10	<0.10
Dieldrin, ug/l	<0.10	<0.10	<0.10	<0.10	<0.10
Endosulfan I, ug/l	<0.050	<0.050	<0.050	<0.050	<0.050
Endosulfan II, ug/l	<0.10	<0.10	<0.10	<0.10	<0.10
Endosulfan sulfate, ug/l	<0.10	<0.10	<0.10	<0.10	<0.10
Endrin, ug/l	<0.10	<0.10	<0.10	<0.10	<0.10
Endrin Aldehyde, ug/l	<0.10	<0.10	<0.10	<0.10	<0.10
Heptachlor, ug/l	<0.050	<0.050	<0.050	<0.050	<0.050
Heptachlor epoxide, ug/l	<0.050	<0.050	<0.050	<0.050	<0.050
Kepone, ug/l	<0.10	<0.10	<0.10	<0.10	<0.10
Methoxychlor, ug/l	<0.30	<0.30	<0.30	<0.30	<0.30

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CC: Alan Bollinger

Project: AA002.03 Robins AFB
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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46283-10	RAFB-SL1-C-E1	11-05-93
46283-11	RAFB-SL2-C-E1	11-05-93
46283-12	RAFB-SL3-C-E1	11-05-93
46283-13	RAFB-SL4-C-E1	11-05-93
46283-14	RAFB-SL5-C-E1	11-05-93

PARAMETER	46283-10	46283-11	46283-12	46283-13	46283-14
Toxaphene, ug/l	<2.0	<2.0	<2.0	<2.0	<2.0
Aroclor-1016, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Aroclor-1221, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Aroclor-1232, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Aroclor-1242, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Aroclor-1248, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Aroclor-1254, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Aroclor-1260, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Surrogate - Dibutylchlorendate % Rec	76 %	73 %	7.0 %	4.0 %	80 %
Date Extracted	11.10.93	11.10.93	11.10.93	11.10.93	11.10.93
Date Analyzed	11.25.93	11.25.93	11.25.93	11.25.93	11.28.93

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LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46283-15	RAFB-SL6-C-E1	11-05-93
46283-16	RAFB-SL7-C-E1	11-05-93
46283-17	RAFB-SL8-C-E1	11-05-93
46283-18	RAFB-SL16-C-E1	11-05-93

PARAMETER	46283-15	46283-16	46283-17	46283-18
Chemical Oxygen Demand (410.2)				
Chemical Oxygen Demand, mg/l	<20	39	41	27
Date Analyzed	11.09.93	11.09.93	11.09.93	11.09.93
Fluoride (340.2)				
Fluoride, mg/l	<0.20	<0.20	<0.20	<0.20
Date Analyzed	11.16.93	11.16.93	11.16.93	11.16.93
Residual Chloride				
Residual Chlorine, mg/l	<1.0	<1.0	<1.0	<1.0
Date Analyzed	11.09.93	11.09.93	11.09.93	11.09.93
Biochemical Oxygen Demand (5-Day) (405.1)				
Biochemical Oxygen Demand (5 Day), mg/l	2.3	2.5	2.3	2.0
Date Analyzed	11.07.93	11.07.93	11.07.93	11.07.93
Suspended Solids (160.2)				
Suspended Solids (160.2), mg/l	<5.0	12	13	<5.0
Date Analyzed	11.08.93	11.08.93	11.08.93	11.08.93
Total Dissolved Solids (160.1)				
Total Dissolved Solids, mg/l	22	47	79	24
Date Analyzed	11.10.93	11.08.93	11.08.93	11.08.93
Fecal Coliform (MF)				
Fecal Coliform, col/100mls	28*F8	0*F9	>2000*F8	69*F8
Date Analyzed	11.08.93	11.08.93	11.08.93	11.08.93

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46283-17	RAFB-SL8-C-E1	11-05-93
46283-18	RAFB-SL16-C-E1	11-05-93

PARAMETER	46283-15	46283-16	46283-17	46283-18
Phenolics, Total Recoverable				
Phenolics,Total Recoverable, mg/l	<0.010	<0.010	<0.010	<0.010
Date Analyzed	11.21.93	11.21.93	11.21.93	11.23.93
Cadmium (200.7)				
Cadmium (200.7), mg/l	<0.0050	<0.0050	<0.0050	<0.0050
Date Analyzed	11.23.93	11.23.93	11.23.93	11.23.93
Chromium (200.7)				
Chromium (200.7), mg/l	<0.010	0.017	<0.010	<0.010
Date Analyzed	11.23.93	11.23.93	11.23.93	11.23.93
Copper (200.7)				
Copper (200.7), mg/l	<0.020	<0.020	<0.020	<0.020
Date Analyzed	11.23.93	11.23.93	11.23.93	11.23.93
Nickel (200.7)				
Nickel (200.7), mg/l	<0.020	<0.020	<0.020	<0.020
Date Analyzed	11.23.93	11.23.93	11.23.93	11.23.93
Silver (200.7)				
Silver (200.7), mg/l	<0.010	<0.010	<0.010	<0.010
Date Analyzed	11.23.93	11.23.93	11.23.93	11.23.93
Zinc (200.7)				
Zinc (200.7), mg/l	0.035	0.25	0.074	0.038
Date Analyzed	11.23.93	11.23.93	11.23.93	11.23.93

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46283-17	RAFB-SL8-C-E1	11-05-93
46283-18	RAFB-SL16-C-E1	11-05-93

PARAMETER	46283-15	46283-16	46283-17	46283-18
Lead (239.2)				
Lead (239.2), mg/l	<0.0050	<0.0050	0.010	<0.0050
Date Analyzed	11.15.93	11.11.93	11.11.93	11.11.93
Total Kjeldahl Nitrogen (351.2)				
Total Kjeldahl Nitrogen-N, mg/l	0.21	0.94	0.55	0.24
Date Analyzed	11.19.93	11.19.93	11.19.93	11.19.93
Ammonia-N (350.1)				
Ammonia-N, mg/l	0.059	0.61	0.31	0.058
Date Analyzed	11.22.93	11.22.93	11.22.93	11.22.93
Nitrate + Nitrite-N (353.2)				
Nitrate + Nitrite-N, mg/l	0.14	0.078	0.63	0.16
Date Analyzed	11.10.93	11.10.93	11.10.93	11.10.93
Nitrogen (Organic) (351.2/350.1)				
Nitrogen(Organic) (351.2/350.1), mg/l	0.15	0.33	0.24	0.18
Date Analyzed	11.22.93	11.22.93	11.22.93	11.22.93
Total Phosphorous (365.4)				
Total Phosphorus (365.4), mg/l	<0.10	<0.10	0.40	<0.10
Date Analyzed	11.19.93	11.19.93	11.19.93	11.19.93

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46283-17	RAFB-SL8-C-E1	11-05-93
46283-18	RAFB-SL16-C-E1	11-05-93

PARAMETER	46283-15	46283-16	46283-17	46283-18
BN-A Extractables (625)				
Acenaphthene, ug/l	<10	<10	<10	<10
Acenaphthylene, ug/l	<10	<10	<10	<10
Anthracene, ug/l	<10	<10	<10	<10
Benzo(a)Anthracene, ug/l	<10	<10	<10	<10
Benzo(b)fluoranthene, ug/l	<10	<10	<10	<10
Benzo(k)fluoranthene, ug/l	<10	<10	<10	<10
Benzo(a)pyrene, ug/l	<10	<10	<10	<10
Benzo(g,h,i)perylene, ug/l	<10	<10	<10	<10
Benzyl butyl phthalate, ug/l	<10	<10	<10	<10
bis(2-Chloroethyl)ether, ug/l	<10	<10	<10	<10
bis(2-Chloroethoxy)methane, ug/l	<10	<10	<10	<10
bis(2-Ethylhexyl)phthalate, ug/l	<10	<10	<10	<10
Bis(2-chloroisopropyl)ether, ug/l	<10	<10	<10	<10
4-Bromophenyl-phenyl-ether, ug/l	<10	<10	<10	<10
2-Chloronaphthalene, ug/l	<10	<10	<10	<10
4-Chlorophenyl-phenyl ether, ug/l	<10	<10	<10	<10
Chrysene, ug/l	<10	<10	<10	<10
Dibenz(a,h)anthracene, ug/l	<10	<10	<10	<10
Di-n-butylphthalate, ug/l	<10	<10	<10	<10
1,3-Dichlorobenzene, ug/I	<10	<10	<10	<10

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LOG NO: S3-46283
Rev-3 1/24/94
Received: 06 NOV 93

Mr. John Schendel
Engineering Science, Inc.
57 Executive Park South, Suite 500
Atlanta, Georgia 30329

CC: Alan Bollinger

Project: AA002.03 Robins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46283-15	RAFB-SL6-C-E1	11-05-93
46283-16	RAFB-SL7-C-E1	11-05-93
46283-17	RAFB-SL8-C-E1	11-05-93
46283-18	RAFB-SL16-C-E1	11-05-93

PARAMETER	46283-15	46283-16	46283-17	46283-18
1,2-Dichlorobenzene, ug/l	<10	<10	<10	<10
1,4-Dichlorobenzene, ug/l	<10	<10	<10	<10
3,3'-Dichlorobenzidine, ug/l	<20	<20	<20	<20
Diethylphthalate, ug/l	<10	<10	<10	<10
Dimethylphthalate, ug/l	<10	<10	<10	<10
2,4-Dinitrotoluene, ug/l	<20	<20	<20	<20
2,6-Dinitrotoluene, ug/l	<20	<20	<20	<20
Di-n-octylphthalate, ug/l	<10	<10	<10	<10
Fluoranthene, ug/l	<10	<10	<10	<10
Fluorene, ug/l	<10	<10	<10	<10
Hexachlorobenzene, ug/l	<10	<10	<10	<10
Hexachlorobutadiene, ug/l	<10	<10	<10	<10
Hexachloroethane, ug/l	<2.0	<2.0	<2.0	<2.0
Indeno(1,2,3-cd)pyrene, ug/l	<10	<10	<10	<10
Isophorone, ug/l	<10	<10	<10	<10
Naphthalene, ug/l	<10	<10	<10	<10
Nitrobenzene, ug/l	<10	<10	<10	<10
N-Nitrosodi-N-Propylamine, ug/l	<10	<10	<10	<10
Phenanthrene, ug/l	<10	<10	<10	<10
Pyrene, ug/l	<10	<10	<10	<10
1,2,4-Trichlorobenzene, ug/l	<10	<10	<10	<10

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46283-15	RAFB-SL6-C-E1	11-05-93
46283-16	RAFB-SL7-C-E1	11-05-93
46283-17	RAFB-SL8-C-E1	11-05-93
46283-18	RAFB-SL16-C-E1	11-05-93

PARAMETER	46283-15	46283-16	46283-17	46283-18
4-Chloro-3-methylphenol, ug/l	<10	<10	<10	<10
2-Chlorophenol, ug/l	<10	<10	<10	<10
2,4-Dichlorophenol, ug/l	<10	<10	<10	<10
2,4-Dimethylphenol, ug/l	<10	<10	<10	<10
2,4-Dinitrophenol, ug/l	<50	<50	<50	<50
2-Methyl-4,6-dinitrophenol, ug/l	<50	<50	<50	<50
2-Nitrophenol, ug/l	<10	<10	<10	<10
4-Nitrophenol, ug/l	<50	<50	<50	<50
Pentachlorophenol, ug/l	<20	<20	<20	<20
Phenol, ug/l	<10	<10	<10	<10
2,4,6-Trichlorophenol, ug/l	<10	<10	<10	<10
Surrogate-PHL	78 %	66 %	66 %	76 %
Surrogate-2FP	73 %	64 %	65 %	77 %
Surrogate-TBP	94 %	93 %	101 %	122 %
Surrogate-NBZ	87 %	73 %	76 %	92 %
Surrogate-2FBP	86 %	78 %	72 %	94 %
Surrogate-TPH	86 %	56 %	58 %	79 %
Date Extracted	11.11.93	11.11.93	11.11.93	11.11.93
Date Analyzed	11.17.93	11.17.93	11.17.93	11.17.93

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46283-15	RAFB-SL6-C-E1	11-05-93
46283-16	RAFB-SL7-C-E1	11-05-93
46283-17	RAFB-SL8-C-E1	11-05-93
46283-18	RAFB-SL16-C-E1	11-05-93

PARAMETER	46283-15	46283-16	46283-17	46283-18
Polynuclear Aromatics (610)				
Acenaphthene, ug/l	<10	<10	<10	<10
Acenaphthylene, ug/l	<10	<10	<10	<10
Benzo(a)pyrene, ug/l	<10	<10	<10	<10
Benzo(g,h,i)perylene, ug/l	<10	<10	<10	<10
Benzo(b,k)fluoranthene, ug/l	<10	<10	<10	<10
Chrysene + Benzo(a)anthracene, ug/l	<10	<10	<10	<10
Fluoranthene, ug/l	<10	<10	<10	<10
Fluorene, ug/l	<10	<10	<10	<10
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthracene, ug/l	<10	<10	<10	<10
Naphthalene, ug/l	<10	<10	<10	<10
Phenanthrene + Anthracene, ug/l	<10	<10	<10	<10
Pyrene, ug/l	<10	<10	<10	<10
1-Methylnaphthalene, ug/l	<10	<10	<10	<10
2-Methylnaphthalene, ug/l	<10	<10	<10	<10
Surrogate - 2-Fluorobiphenyl	32.0	28.7	28.9	31.5
Surrogate - Expected Value, ug/l	50	50	50	50
Surrogate - % Actual Recovery	64 %	57 %	58 %	63 %
Surrogate - Control Limit	27-123 %	27-123 %	27-123 %	27-123 %
Date Extracted	11.11.93	11.11.93	11.11.93	11.11.93
Date Analyzed	11.15.93	11.15.93	11.15.93	11.15.93

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LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46283-15	RAFB-SL6-C-E1	11-05-93
46283-16	RAFB-SL7-C-E1	11-05-93
46283-17	RAFB-SL8-C-E1	11-05-93
46283-18	RAFB-SL16-C-E1	11-05-93

PARAMETER	46283-15	46283-16	46283-17	46283-18
Cl-Pesticides/PCB (608)				
Aldrin, ug/l	<0.050	<0.050	<0.050	<0.050
alpha-BHC, ug/l	<0.050	<0.050	<0.050	<0.050
beta-BHC, ug/l	<0.050	<0.050	<0.050	<0.050
gamma-BHC, ug/l	<0.050	<0.050	<0.050	<0.050
delta-BHC, ug/l	<0.050	<0.050	<0.050	<0.050
Chlordane, ug/l	<0.50	<0.50	<0.50	<0.50
4,4'-DDD, ug/l	<0.10	<0.10	<0.10	<0.10
4,4'-DDE, ug/l	<0.10	<0.10	<0.10	<0.10
4,4'-DDT, ug/l	<0.10	<0.10	<0.10	<0.10
Dieldrin, ug/l	<0.10	<0.10	<0.10	<0.10
Endosulfan I, ug/l	<0.050	<0.050	<0.050	<0.050
Endosulfan II, ug/l	<0.10	<0.10	<0.10	<0.10
Endosulfan sulfate, ug/l	<0.10	<0.10	<0.10	<0.10
Endrin, ug/l	<0.10	<0.10	<0.10	<0.10
Endrin Aldehyde, ug/l	<0.10	<0.10	<0.10	<0.10
Heptachlor, ug/l	<0.050	<0.050	<0.050	<0.050
Heptachlor epoxide, ug/l	<0.050	<0.050	<0.050	<0.050
Kepone, ug/l	<0.10	<0.10	<0.10	<0.10
Methoxychlor, ug/I	<0.30	<0.30	<0.30	<0.30
Toxaphene, ug/l	<2.0	<2.0	<2.0	<2.0

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Project: AA002.03 Robins AFB
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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46283-15	RAFB-SL6-C-E1	11-05-93
46283-16	RAFB-SL7-C-E1	11-05-93
46283-17	RAFB-SL8-C-E1	11-05-93
46283-18	RAFB-SL16-C-E1	11-05-93

PARAMETER	46283-15	46283-16	46283-17	46283-18
Aroclor-1016, ug/l	<1.0	<1.0	<1.0	<1.0
Aroclor-1221, ug/l	<1.0	<1.0	<1.0	<1.0
Aroclor-1232, ug/l	<1.0	<1.0	<1.0	<1.0
Aroclor-1242, ug/l	<1.0	<1.0	<1.0	<1.0
Aroclor-1248, ug/l	<1.0	<1.0	<1.0	<1.0
Aroclor-1254, ug/l	<1.0	<1.0	<1.0	<1.0
Aroclor-1260, ug/l	<1.0	<1.0	<1.0	<1.0
Surrogate - Dibutylchlorendate % Rec	98 %	60 %	88 %	111 %
Date Extracted	11.10.93	11.10.93	11.10.93	11.10.93
Date Analyzed	11.19.93	11.28.93	11.28.93	11.27.93

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46283-19	RAFB-TB1-G-E1	11-05-93

PARAMETER	46283-19
Purgeables (624)	
Benzene, ug/l	<1.0
Bromodichloromethane, ug/l	<1.0
Bromoform, ug/l	<1.0
Bromomethane, ug/l	<1.0
Carbon Tetrachloride, ug/l	<1.0
Chlorobenzene, ug/l	<1.0
Chloroethane, ug/l	<1.0
2-Chloroethylvinyl Ether, ug/l	<10
Chloroform, ug/l	<1.0
Chloromethane, ug/l	<1.0
Dibromochloromethane, ug/l	<1.0
1,2-Dichlorobenzene, ug/l	<1.0
1,3-Dichlorobenzene, ug/l	<1.0
1,4-Dichlorobenzene, ug/l	<1.0
1,1-Dichloroethane, ug/l	<1.0
1,2-Dichloroethane, ug/l	<1.0
1,1-Dichloroethene, ug/l	<1.0
Trans-1,2-Dichloroethene, ug/l	<1.0
Cis-1,2-Dichloroethene, ug/l	<1.0
1,2-Dichloropropane, ug/l	<1.0
Cis-1,3-Dichloropropene, ug/l	<1.0
Trans-1,3-Dichloropropene, ug/l	<1.0
Ethylbenzene, ug/l	<1.0

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Project: AA002.03 Robins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46283-19	RAFB-TB1-G-E1	11-05-93

PARAMETER	46283-19
Methylene Chloride, ug/l	1.0
1,1,2,2-Tetrachloroethane, ug/l	<1.0
Tetrachloroethene, ug/l	<1.0
Toluene, ug/l	<1.0
1,1,1-Trichloroethane, ug/l	4.0
1,1,2-Trichloroethane, ug/l	<1.0
Trichloroethylene, ug/l	<1.0
Trichlorofluoromethane, ug/l	<1.0
Vinyl Chloride, ug/l	<1.0
Xylenes, ug/l	3.1
Acrolein, ug/l	<50
Acrylonitrile, ug/l	<50
Surrogate - Toluene-d8	98 %
Surrogate - 4-Bromofluorobenzene	129 %
Surrogate - 1,2-Dichloroethane-d4	98 %
Date Analyzed	11.19.93

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LOG NO: S3-46283
Rev-2 12/16/93
Received: 06 NOV 93

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Atlanta, Georgia 30329

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Project: AA002.03 Robins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46283-20	Method Blank
46283-21	LCS/LCS Duplicate % Recovery
46283-22	LCS % RPD

PARAMETER	46283-20	46283-21	46283-22
Purgeables (624)			
Benzene, ug/l	<1.0	92/86 %	6.7 %
Bromodichloromethane, ug/l	<1.0	---	---
Bromoform, ug/l	<1.0	---	---
Bromomethane, ug/l	<1.0	---	---
Carbon Tetrachloride, ug/l	<1.0	---	---
Chlorobenzene, ug/l	<1.0	100/105 %	4.9 %
Chloroethane, ug/l	<1.0	---	---
2-Chloroethylvinyl Ether, ug/l	<10	---	---
Chloroform, ug/l	<1.0	---	---
Chloromethane, ug/l	<1.0	---	---
Dibromochloromethane, ug/l	<1.0	---	---
1,2-Dichlorobenzene, ug/l	<1.0	---	---
1,3-Dichlorobenzene, ug/l	<1.0	---	---
1,4-Dichlorobenzene, ug/l	<1.0	---	---
1,1-Dichloroethane, ug/l	<1.0	---	---
1,2-Dichloroethane, ug/l	<1.0	---	---
1,1-Dichloroethene, ug/l	<1.0	105/103 %	1.9 %
Trans-1,2-Dichloroethene, ug/l	<1.0	---	---
Cis-1,2-Dichloroethene, ug/l	<1.0	---	---
1,2-Dichloropropane, ug/l	<1.0	---	---
Cis-1,3-Dichloropropene, ug/l	<1.0	---	---

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Rev-2 12/16/93
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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46283-20	Method Blank
46283-21	LCS/LCS Duplicate % Recovery
46283-22	LCS % RPD

PARAMETER	46283-20	46283-21	46283-22
Trans-1,3-Dichloropropene, ug/l	<1.0	---	---
Ethylbenzene, ug/l	<1.0	---	---
Methylene Chloride (Dichloromethane), ug/l	<1.0	---	---
1,1,2,2-Tetrachloroethane, ug/l	<1.0	---	---
Tetrachloroethene, ug/l	<1.0	---	---
Toluene, ug/l	<1.0	102/104	1.9 %
1,1,1-Trichloroethane, ug/l	<1.0	---	---
1,1,2-Trichloroethane, ug/l	<1.0	---	---
Trichloroethylene, ug/l	<1.0	94/93	1.1 %
Trichlorofluoromethane, ug/l	<1.0	---	---
Vinyl Chloride, ug/l	<1.0	---	---
Xylenes, ug/l	<1.0	---	---
Acrolein, ug/l	<50	---	---
Acrylonitrile, ug/l	<50	---	---
Surrogate - Toluene-d8	106/97 %	103/104 %	---
Surrogate - 4-Bromofluorobenzene	110/95 %	83/96 %	---
Surrogate - 1,2-Dichloroethane-d4	107/96 %	100/97 %	---
Date Analyzed	11.15/18	---	---
Cyanide (335.3)			
Cyanide (335.3), mg/l	<0.010	92/102 %	10 %
Date Analyzed	11.11.93	---	---
pH (150.1)			
pH, units	---	99/99 %	0 %

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Project: AA002.03 Robins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46283-20	Method Blank
46283-21	LCS/LCS Duplicate % Recovery
46283-22	LCS % RPD

PARAMETER	46283-20	46283-21	46283-22
Oil & Grease			
Oil & Grease (413.2), mg/l	<1.0	92/101 %	9.3 %
Date Analyzed	11.18.93	---	---
Chemical Oxygen Demand (410.2)			
Chemical Oxygen Demand, mg/l	<20	98/97 %	1.0 %
Date Analyzed	11.09.93	---	---
Fluoride (340.2)			
Fluoride, mg/l	<0.20	100/104 %	3.9 %
Date Analyzed	11.16.93	---	---
Residual Chloride			
Residual Chlorine, mg/l	<1.0	---	---
Date Analyzed	11.09.93	---	---
Fecal Coliform (MF)			
Fecal Coliform, col/100mls	<1.0	---	---
Date Analyzed	11.08.93	---	---
Phenolics, Total Recoverable			
Phenolics,Total Recoverable, mg/l	<0.010	102/98 %	4.0 %
Date Analyzed	11.21.93	---	---
Cadmium (200.7)			
Cadmium (200.7), mg/l	<0.0050	97/96 %	1.0 %
Date Analyzed	11.23.93	---	---
Chromium (200.7)			
Chromium (200.7), mg/l	<0.010	101/101 %	0 %
Date Analyzed	11.23.93	---	---

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46283-20	Method Blank
46283-21	LCS/LCS Duplicate % Recovery
46283-22	LCS % RPD

PARAMETER	46283-20	46283-21	46283-22
Copper (200.7)			
Copper (200.7), mg/l	<0.020	95/95 %	0 %
Date Analyzed	11.23.93	---	---
Nickel (200.7)			
Nickel (200.7), mg/l	<0.020	98/98 %	0 %
Date Analyzed	11.23.93	---	---
Silver (200.7)			
Silver (200.7), mg/l	<0.010	99/100 %	1.0 %
Date Analyzed	11.23.93	---	---
Zinc (200.7)			
Zinc (200.7), mg/l	<0.020	95/95 %	0 %
Date Analyzed	11.23.93	---	---
Lead (239.2)			
Lead (239.2), mg/l	<0.0050	102/102 %	0 %
Date Analyzed	11.11.93	---	---
Biochemical Oxygen Demand (5-Day) (405.1)			
Biochemical Oxygen Demand (5 Day), mg/l	<2.0	108/113 %	4.5 %
Date Analyzed	11.07.93	---	---
Suspended Solids (160.2)			
Suspended Solids (160.2), mg/l	<5.0	94/94 %	0 %
Date Analyzed	11.08.93	---	---
Total Dissolved Solids (160.1)			
Total Dissolved Solids, mg/l	<5.0	94/96 %	2.1 %
Date Analyzed	11.08.93	---	---

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5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S3-46283

Received: 06 NOV 93

Mr. John Schendel
Engineering Science, Inc.
57 Executive Park South, Suite 500
Atlanta, Georgia 30329

CC: Alan Bollinger

Project: AA002.03 Robins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46283-20	Method Blank
46283-21	LCS/LCS Duplicate % Recovery
46283-22	LCS % RPD

PARAMETER	46283-20	46283-21	46283-22
Nitrate + Nitrite-N (353.2)			
Nitrate + Nitrite-N, mg/l	<0.050	87/92 %	5.6 %
Date Analyzed	11.10.93	---	---
Total Phosphorous (365.4)			
Total Phosphorus (365.4), mg/l	<0.10	96/98 %	2.1 %
Date Analyzed	11.19.93	---	---
Total Kjeldahl Nitrogen (351.2)			
Total Kjeldahl Nitrogen-N, mg/l	<0.10	101/102 %	0.99 %
Date Analyzed	11.19.93	---	---
Ammonia-N (350.1)			
Ammonia-N, mg/l	<0.030	93/92 %	1.1 %
Date Analyzed	11.22.93	---	---
Nitrogen (Organic) (351.2/350.1)			
Nitrogen(Organic) (351.2/350.1), mg/l	<0.070	---	---
Date Analyzed	11.22.93	---	---

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Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46283-20	Method Blank
46283-21	LCS/LCS Duplicate % Recovery
46283-22	LCS % RPD

PARAMETER	46283-20	46283-21	46283-22
BN-A Extractables (625)			
Acenaphthene, ug/l	<10	85/87 %	2.3 %
Acenaphthylene, ug/l	<10	---	---
Anthracene, ug/l	<10	---	---
Benzo(a)Anthracene, ug/l	<10	---	---
Benzo(b)fluoranthene, ug/l	<10	---	---
Benzo(k)fluoranthene, ug/l	<10	---	---
Benzo(a)pyrene, ug/l	<10	---	---
Benzo(g,h,i)perylene, ug/l	<10	---	---
Benzyl butyl phthalate, ug/l	<10	---	---
bis(2-Chloroethyl)ether, ug/l	<10	---	---
bis(2-Chloroethoxy)methane, ug/l	<10	---	---
bis(2-Ethylhexyl)phthalate, ug/l	<10	---	---
Bis(2-chloroisopropyl)ether, ug/l	<10	---	---
4-Bromophenyl-phenyl-ether, ug/l	<10	---	---
2-Chloronaphthalene, ug/l	<10	---	---
4-Chlorophenyl-phenyl ether, ug/l	<10	---	---
Chrysene, ug/l	<10	---	---
Dibenz(a,h)anthracene, ug/l	<10	---	---
Di-n-butylphthalate, ug/l	<10	---	---
1,3-Dichlorobenzene, ug/l	<10	---	---
1,2-Dichlorobenzene, ug/l	<10	---	---

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LOG NO: S3-46283
Rev-3 1/24/94
Received: 06 NOV 93

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Project: AA002.03 Robins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46283-20	Method Blank
46283-21	LCS/LCS Duplicate % Recovery
46283-22	LCS % RPD

PARAMETER	46283-20	46283-21	46283-22
1,4-Dichlorobenzene, ug/l	<10	72/76 %	5.4 %
3,3'-Dichlorobenzidine, ug/l	<20	---	---
Diethylphthalate, ug/l	<10	---	---
Dimethylphthalate, ug/l	<10	---	---
2,4-Dinitrotoluene, ug/l	<20	69/72 %	4.3 %
2,6-Dinitrotoluene, ug/l	<20	---	---
Di-n-octylphthalate, ug/l	<10	---	---
Fluoranthene, ug/l	<10	---	---
Fluorene, ug/l	<10	---	---
Hexachlorobenzene, ug/l	<10	---	---
Hexachlorobutadiene, ug/l	<10	---	---
Hexachloroethane, ug/l	<2.0	---	---
Indeno(1,2,3-cd)pyrene, ug/l	<10	---	---
Isophorone, ug/l	<10	---	---
Naphthalene, ug/l	<10	---	---
Nitrobenzene, ug/l	<10	---	---
N-Nitrosodi-N-Propylamine, ug/l	<10	86/97 %	12 %
Phenanthrene, ug/l	<10	---	---
Pyrene, ug/l	<10	98/103 %	5.0 %
1,2,4-Trichlorobenzene, ug/l	<10	81/85 %	4.8 %
4-Chloro-3-methylphenol, ug/l	<10	88/93 %	5.5 %
2-Chlorophenol, ug/l	<10	81/83 %	2.4 %

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↳ By J. Schendel

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LOG NO: S3-46283
Rev-2 12/16/93
Received: 06 NOV 93

Mr. John Schendel
Engineering Science, Inc.
57 Executive Park South, Suite 500
Atlanta, Georgia 30329

CC: Alan Bollinger

Project: AA002.03 Robins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46283-20	Method Blank
46283-21	LCS/LCS Duplicate % Recovery
46283-22	LCS % RPD

PARAMETER	46283-20	46283-21	46283-22
2,4-Dichlorophenol, ug/l	<10	---	---
2,4-Dimethylphenol, ug/l	<10	---	---
2,4-Dinitrophenol, ug/l	<50	---	---
2-Methyl-4,6-dinitrophenol, ug/l	<50	---	---
2-Nitrophenol, ug/l	<10	---	---
4-Nitrophenol, ug/l	<50	82/83 %	1.2 %
Pentachlorophenol, ug/l	<20	74/78 %	5.3 %
Phenol, ug/l	<10	79/82 %	3.7 %
2,4,6-Trichlorophenol, ug/l	<10	---	---
Surrogate-PHL	80 %	80/81 %	---
Surrogate-2FP	81 %	80/83 %	---
Surrogate-TBP	92 %	93/97 %	---
Surrogate-NBZ	85 %	91/93 %	---
Surrogate-2FBP	92 %	92/94 %	---
Surrogate-TPH	99 %	96/100 %	---
Date Extracted	11.11.93	---	---
Date Analyzed	11.17.93	---	---

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By J. Schendel

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LOG NO: S3-46283

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Atlanta, Georgia 30329

CC: Alan Bollinger

Project: AA002.03 Robins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46283-20	Method Blank
46283-21	LCS/LCS Duplicate % Recovery
46283-22	LCS % RPD

PARAMETER	46283-20	46283-21	46283-22
Polynuclear Aromatics (610)			
Acenaphthene, ug/l	<10	72/64 %	12 %
Acenaphthylene, ug/l	<10	---	---
Benzo(a)pyrene, ug/l	<10	68/78 %	14 %
Benzo(g,h,i)perylene, ug/l	<10	---	---
Benzo(b,k)fluoranthene, ug/l	<10	---	---
Chrysene + Benzo(a)anthracene, ug/l	<10	---	---
Fluoranthene, ug/l	<10	---	---
Fluorene, ug/l	<10	72/64 %	12 %
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthracene, ug/l	<10	---	---
Naphthalene, ug/l	<10	56/50 %	11 %
Phenanthrene + Anthracene, ug/l	<10	---	---
Pyrene, ug/l	<10	72/68 %	5.7 %
1-Methylnaphthalene, ug/l	<10	---	---
2-Methylnaphthalene, ug/l	<10	---	---
Surrogate - 2-Fluorobiphenyl	62.5	37.0/32.4	---
Surrogate - Expected Value, ug/l	50	50	---
Surrogate - % Actual Recovery	65 %	74/65 %	---
Surrogate - Control Limit	27-123 %	27-123 %	---
Date Extracted	11.11.93	---	---
Date Analyzed	11.15.93	---	---

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Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46283-20	Method Blank
46283-21	LCS/LCS Duplicate % Recovery
46283-22	LCS % RPD

PARAMETER	46283-20	46283-21	46283-22
Cl-Pesticides/PCB (608)			
Aldrin, ug/l	<0.050	108/108 %	0 %
alpha-BHC, ug/l	<0.050	---	---
beta-BHC, ug/l	<0.050	---	---
gamma-BHC, ug/l	<0.050	102/97 %	5.0 %
delta-BHC, ug/l	<0.050	---	---
Chlordane, ug/l	<0.50	---	---
4,4'-DDD, ug/l	<0.10	---	---
4,4'-DDE, ug/l	<0.10	---	---
4,4'-DDT, ug/l	<0.10	130/128 %	1.6 %
Dieldrin, ug/l	<0.10	100/101 %	1.0 %
Endosulfan I, ug/l	<0.050	---	---
Endosulfan II, ug/l	<0.10	---	---
Endosulfan sulfate, ug/l	<0.10	---	---
Endrin, ug/l	<0.10	114/122 %	6.8 %
Endrin Aldehyde, ug/l	<0.10	---	---
Heptachlor, ug/l	<0.050	106/104 %	1.9 %
Heptachlor epoxide, ug/l	<0.050	---	---
Kepone, ug/l	<0.10	---	---
Methoxychlor, ug/l	<0.30	---	---
Toxaphene, ug/l	<2.0	---	---
Aroclor-1016, ug/l	<1.0	---	---

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46283-20	Method Blank
46283-21	LCS/LCS Duplicate % Recovery
46283-22	LCS % RPD

PARAMETER	46283-20	46283-21	46283-22
Aroclor-1221, ug/l	<1.0	---	---
Aroclor-1232, ug/l	<1.0	---	---
Aroclor-1242, ug/l	<1.0	---	---
Aroclor-1248, ug/l	<1.0	---	---
Aroclor-1254, ug/l	<1.0	---	---
Aroclor-1260, ug/l	<1.0	---	---
Surrogate - Dibutylchlorendate % Rec	135 %	135/134 %	---
Date Extracted	11.10.93	---	---
Date Analyzed	11.19.93	---	---

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Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46283-23	MS/MSD % Recovery (RAFB-SL6-G-E1)
46283-24	MS/MSD % RPD

PARAMETER	46283-23	46283-24
Purgeables (624)		
Benzene	150/141 %	6.2 %
Chlorobenzene	23/43 %	61 %
1,1-Dichloroethene	98/110 %	12 %
Toluene	248/320 %	25 %
Trichloroethylene	112/114 %	1.8 %
Surrogate - Toluene-d8	87/106 %	---
Surrogate - 4-Bromofluorobenzene	103/76 %	---
Surrogate - 1,2-Dichloroethane-d4	96/97 %	---
Cyanide (335.3)		
Cyanide (335.3)	101/103 %	2.0 %
Oil & Grease		
Oil & Grease (413.2)	*F61	*F61

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46283-25	MS/MSD % Recovery (RAFB-SL6-C-E1)
46283-26	MS/MSD % RPD

PARAMETER	46283-25	46283-26
Chemical Oxygen Demand (410.2)		
Chemical Oxygen Demand	---	---
Fluoride (340.2)		
Fluoride	96/96 %	0 %
Fecal Coliform (MF)		
Fecal Coliform	---	---
Phenolics, Total Recoverable		
Phenolics,Total Recoverable,	104/110 %	5.6 %
Cadmium (200.7)		
Cadmium (200.7)	97/95 %	2.1 %
Chromium (200.7)		
Chromium (200.7)	102/102 %	0 %
Copper (200.7)		
Copper (200.7)	96/96 %	0 %
Nickel (200.7)		
Nickel (200.7)	98/98 %	0 %
Silver (200.7)		
Silver (200.7)	98/98 %	0 %
Zinc (200.7)		
Zinc (200.7)	94/95 %	1.1 %
Lead (239.2)		
Lead (239.2)	108/103 %	4.7 %
Nitrate + Nitrite-N (353.2)		
Nitrate + Nitrite-N	62/67 %	7.8 %

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LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46283-25	MS/MSD % Recovery (RAFB-SL6-C-E1)
46283-26	MS/MSD % RPD

PARAMETER	46283-25	46283-26
Total Phosphorous (365.4)		
Total Phosphorus (365.4)	101/107 %	5.8 %
Total Kjeldahl Nitrogen (351.2)		
Total Kjeldahl Nitrogen-N	103/101 %	2.0 %
Ammonia-N (350.1)		
Ammonia-N	71/74 %	4.1 %
Nitrogen (Organic) (351.2/350.1)		
Nitrogen(Organic) (351.2/350.1)	---	---

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LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46283-25	MS/MSD % Recovery (RAFB-SL6-C-E1)
46283-26	MS/MSD % RPD

PARAMETER	46283-25	46283-26
BN-A Extractables (625)		
Acenaphthene	89/84 %	5.8 %
1,4-Dichlorobenzene	68/61 %	11 %
2,4-Dinitrotoluene	120/119 %	0.84 %
N-Nitrosodi-N-Propylamine	102/88 %	15 %
Pyrene	87/82 %	5.9 %
1,2,4-Trichlorobenzene	71/66 %	7.3 %
4-Chloro-3-methylphenol	80/75 %	6.4 %
2-Chlorophenol	68/65 %	4.5 %
4-Nitrophenol	84/79 %	6.1 %
Pentachlorophenol	62/59 %	5.0 %
Phenol	71/70 %	1.4 %
Surrogate-PHL	74/69 %	---
Surrogate-2FP	73/68 %	---
Surrogate-TBP	106/104 %	---
Surrogate-NBZ	85/82 %	---
Surrogate-2FBP	89/87 %	---
Surrogate-TPH	81/78 %	---
Polynuclear Aromatics (610)		
Acenaphthene	60/58 %	3.4 %
Benzo(a)pyrene	65/74 %	13 %
Fluorene	60/57 %	5.1 %
Naphthalene	68/64 %	6.1 %
Pyrene	60/77 %	25 %
Surrogate - 2-Fluorobiphenyl	57/58 %	---

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46283-25	MS/MSD % Recovery (RAFB-SL6-C-E1)
46283-26	MS/MSD % RPD

PARAMETER	46283-25	46283-26
Cl-Pesticides/PCB (608)		
Aldrin	100/104 %	3.9 %
gamma-BHC	96/100 %	4.1 %
4,4'-DDT	123/116 %	5.8 %
Dieldrin	99/104 %	4.9 %
Endrin	131/124 %	5.5 %
Heptachlor	102/104 %	1.9 %
Surrogate - Dibutylchlorendate % Rec	120/110 %	---

Methods: EPA SW-846 and 40 CFR Part 136.

*F8 = Confluent growth with coliforms.

*F9 = Confluent growth without coliforms.

*F61 = The recoveries of the matrix spikes are outside advisory limits due to the abundance of the target analyte in the sample.

Linda Wolfe

Linda A. Wolfe

RECD DEC 08 1993

Final Page Of Report

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

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- [ ] 2846 Industrial Plaza Drive, Tallahassee, FL 32301 — Phone: (904) 878-3994 — Fax (904) 878-9504
- [ ] 414 Southwest 12th Avenue, Deerfield Beach, FL 33442 — Phone: (305) 421-7400 — Fax (305) 421-2584
- [ ] 900 Lakeside Drive, Mobile, AL 36693 — Phone: (205) 666-6633 — Fax (205) 666-6696
- [ ] 6712 Benjamin Road, Suite 100, Tampa, FL 33634 — Phone: (813) 885-7427 — Fax (813) 885-7049

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

P.O. NUMBER:
PROJECT NUMBER: AA002.03
PROJECT NAME: Robins AFB
CLIENT NAME: Engineering-Science
TELEPHONE/FAX NO.: (404) 235-2400
CLIENT ADDRESS: 57 Executive Park, South, NE
CITY, STATE, ZIP CODE: Atlanta GA 30329
SAMPLER(S) NAME(S): [illegible] for Jeff Albert
CLIENT PROJECT MANAGER: Alan Bollinger

PAGE 1 OF 2

- [x] STANDARD TAT
- [ ] EXPEDITED TAT *

REPORT DUE DATE ____

* SUBJECT TO RUSH FEES

MATRIX TYPE: SPK

REQUIRED ANALYSES / NUMBER OF CONTAINERS SUBMITTED

SAMPLING DATE	SAMPLING TIME	SAMPLE IDENTIFICATION	AQUEOUS MATRIX	NONAQUEOUS MATRIX	OIL MATRIX	AIR MATRIX	~~EPA 601/602~~ SPK	~~EPA 624~~ SPK	COD (410.1)	Flouride (340.2)	FC-MF (Sm9221-C)	Penols (420.1)	metals (200.7)	BOD/TSS/TDS (405.1, 160.2, 160.1)	~~PH~~ SPK	~~Oil + Grease~~ SPK
11-5-93	2400	RAFB-SD1-E-L1	X				~~3~~ SPK	~~3~~ SPK	1	1	1	1	1	1	~~1~~ SPK	~~1~~ SPK

EAS

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
[signature]	10/15	2:00	Alexa P. Butler	10/18	1600	[signature]	11-5-93	1700

RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

FOR SAVANNAH LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	S.L. LOG NO.
J Bak	11/6/93	12:20	[x] YES [ ] NO		46283

LABORATORY REMARKS

RECD DEC 08 1993

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

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P.O. NUMBER:
PROJECT NUMBER: AA002.03
PROJECT NAME: Robins AFB
CLIENT NAME: Engineering - Science
TELEPHONE/FAX NO.: (404) 235-2400
CLIENT ADDRESS: 57 Executive Park, South, NE
CITY, STATE, ZIP CODE: Atlanta GA 30329
SAMPLER(S) NAME(S): E [signature] for JEFF absent
CLIENT PROJECT MANAGER: Alan Bollinger

- [X] STANDARD TAT
- [ ] EXPEDITED TAT *

REPORT DUE DATE ______

* SUBJECT TO RUSH FEES

REQUIRED ANALYSES — NUMBER OF CONTAINERS SUBMITTED

SAMPLING DATE	SAMPLING TIME	SAMPLE IDENTIFICATION	AQUEOUS MATRIX	NONAQUEOUS MATRIX	OIL MATRIX	AIR MATRIX	Cyanide	Base Neutrals Acids (625)	PAH (610)	Pesticides (608)		NO3 TNO2 Phosphoros Total (353 365.4) H3+Organitrogen (350.3, 351.2)			
11-5-93	2400	RAFB-SL1-C-E1	X				1	2	1	1	—	1	—	—	—

E [initials]

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
Bacon	10/15	2:00	Steve P. Kistler	10/18	1600	E [signature]	11-5-93	1700
RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

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RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	S.L. LOG NO.	LABORATORY REMARKS
J Baker	11/6/93	12:20	[X] YES [ ] NO		46283	11/9 per John Schendel comp samples do not require cyanide KH

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- [ ] 900 Lakeside Drive, Mobile, AL 36693 — Phone: (205) 666-6633 — Fax (205) 666-6696
- [ ] 6712 Benjamin Road, Suite 100, Tampa, FL 33634 — Phone: (813) 885-7427 — Fax (813) 885-7049

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

P.O. NUMBER	PROJECT NUMBER	PROJECT NAME
	AA002.03	Robins AFB

CLIENT NAME: Engineering - Science
TELEPHONE/FAX NO.: (404) 235-2400
CLIENT ADDRESS: 57 Executive Park, South, NE
CITY, STATE, ZIP CODE: Atlanta GA 30329
SAMPLER(S) NAME(S): E for Jeff Albert
CLIENT PROJECT MANAGER: Alan Bollinger

PAGE 1 OF 2

- [x] STANDARD TAT
- [ ] EXPEDITED TAT *

REPORT DUE DATE ______
* SUBJECT TO RUSH FEES

REQUIRED ANALYSES / NUMBER OF CONTAINERS SUBMITTED

SAMPLING DATE	SAMPLING TIME	SAMPLE IDENTIFICATION	AQUEOUS MATRIX	NONAQUEOUS MATRIX	OIL MATRIX	AIR MATRIX	~~EPA 601/602~~ SK	~~EPA 624~~ SK	COD (410.1)	Flouride (340.2)	FC-MF (SM9221)	Penols (420.1)	metals (200.7, 239.2, 405.1, 160.2, 160.1)	800/TSS/TDS	~~PH~~ SK	~~Oil + Grease~~
11-5-93	2430	RAFBSL2-~~6~~-E1	X				~~3~~ SK	~~3~~ SK	1	1	1	1	1	1	~~1~~ SK	~~2~~ SK

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
Bacon	10/15	2:00	Steve P. Butler	10/18	1600	E	11-5-93	1700
RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

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RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	S.L. LOG NO.
L Baker	11/6/93	12:20	[x] YES [ ] NO		46283

LABORATORY REMARKS

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- [ ] 6712 Benjamin Road, Suite 100, Tampa, FL 33634 — Phone: (813) 885-7427 — Fax (813) 885-7049

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

P.O. NUMBER:
PROJECT NUMBER: AA002.03
PROJECT NAME: Robins AFB
CLIENT NAME: Engineering - Science
TELEPHONE/FAX NO.: (404) 235-2400
CLIENT ADDRESS: 57 Executive Park, South, NE
CITY, STATE, ZIP CODE: ~~Atlanta~~ GA 30329
SAMPLER(S) NAME(S): for Jeff Albert
CLIENT PROJECT MANAGER: Alan Bollinger

PAGE 2 OF 2

- [x] STANDARD TAT
- [ ] EXPEDITED TAT *

REPORT DUE DATE ____

* SUBJECT TO RUSH FEES

MATRIX TYPE: AQUEOUS MATRIX / NONAQUEOUS MATRIX / OIL MATRIX / AIR MATRIX

REQUIRED ANALYSES / NUMBER OF CONTAINERS SUBMITTED

SAMPLING DATE	SAMPLING TIME	SAMPLE IDENTIFICATION	AQUEOUS MATRIX	NONAQUEOUS MATRIX	OIL MATRIX	AIR MATRIX	~~Metals~~ SPK	Base Neutrals/ acids (625)	PAH (610)	Pesticides (608)	NO3 TKN/2 Phophorus (365.4)	Total NH3 + org Nitrogen (353.2)	TLN (380.3 351.2)		
11-5-93	2430	RAFB-SC2-G-E1	X				Bk X	2	1	1	—	1	—	—	—

RECD DEC 08 1993

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
Bacon	10/15	2:00	Max P Butler	10/18	1600	[signature]	11-5-93	1200
RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

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RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	S.L. LOG NO.	LABORATORY REMARKS
L Baker	11/6/93	12:20	[x] YES [ ] NO		46283	

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

P.O. NUMBER	PROJECT NUMBER	PROJECT NAME	PAGE	OF
	AA002.03	Robins AFB	1	2

CLIENT NAME: Engineering-Science
TELEPHONE/FAX NO.: (404) 235-2400
CLIENT ADDRESS: 57 Executive Park, South, NE
CITY, STATE, ZIP CODE: Atlanta GA 30329
SAMPLER(S) NAME(S): Alan Bollinger
CLIENT PROJECT MANAGER: Alan Bollinger

- [X] STANDARD TAT
- [ ] EXPEDITED TAT *

REPORT DUE DATE ______

* SUBJECT TO RUSH FEES

REQUIRED ANALYSES / NUMBER OF CONTAINERS SUBMITTED

SAMPLING DATE	SAMPLING TIME	SAMPLE IDENTIFICATION	AQUEOUS MATRIX	NONAQUEOUS MATRIX	OIL MATRIX	AIR MATRIX	~~EPA 601/602~~ SPK	~~EPA 624~~ SPK	COD (410.1)	Flouride (340.2)	FL-MF (SM9221-[illegible])	Phenols (420.1)	metals (200.7) 239.2	BOD/TSS/TDS (405.1, 160.2, 160.1)	~~pH~~ SPK	~~Oil & grease~~ SPK
11-5-93	0100	RAFB-SL3-C-E1	X				~~3~~ SPK	~~3~~ SPK	1	1	1	1	1	1	~~X~~ SPK	~~X~~ SPK

EA [illegible]

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RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
BACDa	10/15	2:00	[illegible]	10/18	1600	[illegible]	11-5-93	1700
RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

FOR SAVANNAH LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	S.L. LOG NO.	LABORATORY REMARKS
L Baker	11/6/93	12:20	[X] YES [ ] NO		46283	

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

P.O. NUMBER:
PROJECT NUMBER: AA002.03
PROJECT NAME: Robins AFB
CLIENT NAME: Engineering - Science
TELEPHONE/FAX NO.: (404) 235-2400
CLIENT ADDRESS: 57 Executive Park South, NE
CITY, STATE, ZIP CODE: Atlanta GA 30329
SAMPLER(S) NAME(S): Alan Ballinger
CLIENT PROJECT MANAGER: ALAN Ballinger

PAGE 2 OF 2

[X] STANDARD TAT
[ ] EXPEDITED TAT *
REPORT DUE DATE ____
* SUBJECT TO RUSH FEES

MATRIX TYPE: AQUEOUS MATRIX / NONAQUEOUS MATRIX / OIL MATRIX / AIR MATRIX

REQUIRED ANALYSES / NUMBER OF CONTAINERS SUBMITTED

SAMPLING DATE	SAMPLING TIME	SAMPLE IDENTIFICATION	AQUEOUS MATRIX	NONAQUEOUS MATRIX	OIL MATRIX	AIR MATRIX	~~Cyanide~~ SPK	Base Neutrals/acids (625)	PAH (L10)	Pesticides (608)		NO3/NO2 Total Phosphorus (353.2, 365.4) NH3 + org Nitrogen TKN (350.3, 351.2)			
11-5-93	0100	RAFB-SL3-C-E1	X				SPK X	2	1	1	-	1	-	-	-

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
Bacon	10/18	2:00	Dave P. Kistler	10/18	1600	E. [illegible]	11-5-93	1700
RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

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RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	S.L. LOG NO.	LABORATORY REMARKS
J. Baker	11/6/93	12:20	[X] YES [ ] NO		46283	

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

P.O. NUMBER:
PROJECT NUMBER: AA002.03
PROJECT NAME: Robins AFB
CLIENT NAME: Engineering - Science
TELEPHONE/FAX NO.: (404) 235-2400
CLIENT ADDRESS: 57 Executive Park, South,
CITY, STATE, ZIP CODE: NE Atlanta Ga 30329
SAMPLER(S) NAME(S): Alan Ballinger
CLIENT PROJECT MANAGER: Alan Ballinger

PAGE 1 OF 2

☒ STANDARD TAT
☐ EXPEDITED TAT *
REPORT DUE DATE ____
* SUBJECT TO RUSH FEES

MATRIX TYPE: AQUEOUS MATRIX, NONAQUEOUS MATRIX, OIL MATRIX, AIR MATRIX

REQUIRED ANALYSES / NUMBER OF CONTAINERS SUBMITTED

SAMPLING DATE	SAMPLING TIME	SAMPLE IDENTIFICATION	AQUEOUS MATRIX	NONAQUEOUS MATRIX	OIL MATRIX	AIR MATRIX	~~EPA 601+602~~ SPK	~~EPA 624~~ SPK	COD (410.1)	Floride (346.2)	FC-MF (SM922-C)	Penols (420.1)	Metals (200.7, 239.2)	BOD/TSS/TDS (405.1, 160.2, 160.1)	~~PH~~ SPK	~~Oil + Grease~~ SPK
11-5-93	2446	RAFB-SL4-C-E1	X				~~1~~ SPK	~~1~~ SPK	1	1	1	1	1	1	~~1~~ SPK	~~2~~

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
[signature]	10/15	2:00	[signature]	10/18	1600	[signature]	11-5-93	1700

RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

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RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	S.L. LOG NO.	LABORATORY REMARKS
J Baker	11/6/93	12:20	☑ YES ☐ NO		46283	

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

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P.O. NUMBER	PROJECT NUMBER	PROJECT NAME
	AA002.03	Robins AFB

CLIENT NAME: Engineering-Science
TELEPHONE/FAX NO.: (404) 235-2400
CLIENT ADDRESS: 57 Executive Park, South, NE
CITY, STATE, ZIP CODE: Atlanta Ga. 30329
SAMPLER(S) NAME(S): Alan Bollinger
CLIENT PROJECT MANAGER: Alan Bollinger

PAGE 2 OF 2

☒ STANDARD TAT
☐ EXPEDITED TAT *
REPORT DUE DATE ______
* SUBJECT TO RUSH FEES

REQUIRED ANALYSES — NUMBER OF CONTAINERS SUBMITTED

SAMPLING DATE	SAMPLING TIME	SAMPLE IDENTIFICATION	AQUEOUS MATRIX	NONAQUEOUS MATRIX	OIL MATRIX	AIR MATRIX	~~Cyanide~~ SPK Base Neutrals Acids (625)	PAH (610)	Pesticides (608)	NO3 TNO2	Total Phosphoros (353.4) 365.4)	NH3+Org Nitrogen	TKN (350.3, 351(2))	
11-5-93	2448	RAFB-SL4-C-E1	X			8X	2	1	1	–	1	–	–	–

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
Bacon	10/15	2:10	Max V. Kistler	10/18	1600	[signature]	11-5-93	1700
RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

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RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	S.L. LOG NO.	LABORATORY REMARKS
L Baker	11/6/93	10:20	☑ YES ☐ NO		46283	

KAS

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

P.O. NUMBER	PROJECT NUMBER	PROJECT NAME	PAGE	OF
	AA002.03	Robins AFB	1	2

CLIENT NAME: Engineering-Science
TELEPHONE/FAX NO.: (404) 235-2400
CLIENT ADDRESS: 57 Executive Park, South
CITY, STATE, ZIP CODE: NE Atlanta Ga 30329
SAMPLER(S) NAME(S): Alan Bollinger
CLIENT PROJECT MANAGER: Alan Bollinger

☒ STANDARD TAT
☐ EXPEDITED TAT *
REPORT DUE DATE ______
* SUBJECT TO RUSH FEES

MATRIX TYPE: AQUEOUS MATRIX / NONAQUEOUS MATRIX / OIL MATRIX / AIR MATRIX

REQUIRED ANALYSES / NUMBER OF CONTAINERS SUBMITTED

SAMPLING DATE	SAMPLING TIME	SAMPLE IDENTIFICATION	AQUEOUS MATRIX	NONAQUEOUS MATRIX	OIL MATRIX	AIR MATRIX	~~EPA 601/602~~ SPK	~~EPA 624~~ SPK	COD (410.1)	Flouride (340.2)	FC-MF (SM9221-D)	Penols (420.1)	Metals (200.7, 239.2)	BOD, TSS, TDS (405.1, 160.2, 160.4)	~~pH~~ SPK	~~Oil/Grease~~ SPK
11-5-93	2435	RHAFB-SLS-C-E1	X				SPK ~~3~~	SPK ~~2~~	1	1	1	1	1	1	SPK ~~1~~	SPK ~~2~~

EAB

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RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
[signature]	10/15	2:00	Steve V. Kittle	10/18	1600	[signature]	11-5-93	1200
RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

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RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	S.L. LOG NO.	LABORATORY REMARKS
J Baker	11/6/93	12:20	☑ YES ☐ NO		46283	

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

P.O. NUMBER:
PROJECT NUMBER: AA002.03
PROJECT NAME: Robins AFB
CLIENT NAME: Engineering-Science
TELEPHONE/FAX NO.: (404) 235-2400
CLIENT ADDRESS: 57 Executive Park, South NE
CITY, STATE, ZIP CODE: Atlanta GA 30329
SAMPLER(S) NAME(S): Alan Ballinger
CLIENT PROJECT MANAGER: Alan Bollinger

PAGE 2 OF 2

- [X] STANDARD TAT
- [ ] EXPEDITED TAT *

REPORT DUE DATE ______

* SUBJECT TO RUSH FEES

REQUIRED ANALYSES / NUMBER OF CONTAINERS SUBMITTED

SAMPLING DATE	SAMPLING TIME	SAMPLE IDENTIFICATION	AQUEOUS MATRIX	NONAQUEOUS MATRIX	OIL MATRIX	AIR MATRIX	~~Chlorinated 8PK~~	Base Neutral Acids (625)	PAH (610)	Pesticides (608)		NO3 TNO2 Total Phosphorus (353.2, 365.4) NH3 + Org Nitrogen (350.3, 351.2) TKN			
11-5-93	2435	RAFB-SL5-C-E1	X				~~8X~~	2	1	1	–	1	–	–	–

EAS

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
Bacon	10/15	2:00	Alex P. Kistler	10/18	1600	[illegible]	11-5-93	1700
RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

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RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	S.L. LOG NO.	LABORATORY REMARKS
J. Baker	11/6/93	12:20	[X] YES [ ] NO		L16283	

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P.O. NUMBER	
PROJECT NUMBER	AA002.03
PROJECT NAME	Robbins AFB
CLIENT NAME	Engineering - Science
TELEPHONE/FAX NO.	(404) 235-2400
CLIENT ADDRESS	57 Executive Park, South
CITY, STATE, ZIP CODE	NE Atlanta Ga 30329
SAMPLER(S) NAME(S)	[signature]
CLIENT PROJECT MANAGER	Allen Bollinger

☒ STANDARD TAT
☐ EXPEDITED TAT *
REPORT DUE DATE ________
* SUBJECT TO RUSH FEES

MATRIX TYPE: AQUEOUS MATRIX, NONAQUEOUS MATRIX, OIL MATRIX, AIR MATRIX

REQUIRED ANALYSES / NUMBER OF CONTAINERS SUBMITTED

SAMPLING DATE	SAMPLING TIME	SAMPLE IDENTIFICATION	AQUEOUS MATRIX	NONAQUEOUS MATRIX	OIL MATRIX	AIR MATRIX	~~EPA 601/602~~ SRK	~~EPA 624~~ SRK	COD (410.1)	Flouride (340.2)	FC-MF (SM9221-C)	Penols (420.1)	Metals (200.7, 239.2)	BOD/TSS/TDS (405.1, 160.2, 160.1)	~~O+H~~ SRK	~~Oil + Grease~~ SRK
11-5-93	2415	RAFB-SL6-C-E1	X				~~3~~ SRK	~~3~~ SRK	1	1	1	1	1	1	~~1~~ SRK	~~3~~ SRK

E.S.

RECD DEC 08 1993

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
Bacon	10/15	2:00	Steve P. Kistler	10/18	1600	[signature]	11-5-93	1700
RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

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RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	S.L. LOG NO.	LABORATORY REMARKS
L Baker	11/6/93	12:20	☑ YES ☐ NO		46283	

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☐ 414 Southwest 12th Avenue, Deerfield Beach, FL 33442 — Phone: (305) 421-7400 — Fax (305) 421-2584
☐ 900 Lakeside Drive, Mobile, AL 36693 — Phone: (205) 666-6633 — Fax (205) 666-6696
☐ 6712 Benjamin Road, Suite 100, Tampa, FL 33634 — Phone: (813) 885-7427 — Fax (813) 885-7049

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

P.O. NUMBER:
PROJECT NUMBER: AA002.03
PROJECT NAME: Robins AFB
PAGE 2 OF 2

CLIENT NAME: Engineering, Science
TELEPHONE/FAX NO.: (404) 235-2400
CLIENT ADDRESS: 57 Executive Park, South, NE
CITY, STATE, ZIP CODE: Atlanta GA 30329
SAMPLER(S) NAME(S): [signature]
CLIENT PROJECT MANAGER: Allan Bollinger

☒ STANDARD TAT
☐ EXPEDITED TAT *
REPORT DUE DATE ____
* SUBJECT TO RUSH FEES

REQUIRED ANALYSES / NUMBER OF CONTAINERS SUBMITTED

SAMPLING DATE	SAMPLING TIME	SAMPLE IDENTIFICATION	AQUEOUS MATRIX	NONAQUEOUS MATRIX	OIL MATRIX	AIR MATRIX	~~Cyanide~~ SPK	Base Neutrals Acids (625)	PAH (610)	Pesticides (608)		NO3 TNO2 Total Phosphorus (365.4)	NH3+Org Nitrogen TKN (350.3, 351.2)			
11-5-93	2415	RAFB-SLG-C-E1					SPK	2	1	1	—	1	—	—	—	

RECD DEC 08 1993

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
[signature]	10/15	200	Dave P. Kistler	10/18	1600	[signature]	12-5-93	1700

RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

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RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	S.L. LOG NO.	LABORATORY REMARKS
F Baker	11/6/93	12:20	☒ YES ☐ NO		46283	

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☐ 6712 Benjamin Road, Suite 100, Tampa, FL 33634 — Phone: (813) 885-7427 — Fax (813) 885-7049

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

P.O. NUMBER:
PROJECT NUMBER: AA002.03
PROJECT NAME: Robins AFB
CLIENT NAME: Engineering - Science
TELEPHONE/FAX NO.: (404) 235-2400
CLIENT ADDRESS: 57 Executive Park, South, NE,
CITY, STATE, ZIP CODE: Atlanta GA 30329
SAMPLER(S) NAME(S): [illegible]
CLIENT PROJECT MANAGER: Alan Bollinger

PAGE 1 OF 2

☒ STANDARD TAT
☐ EXPEDITED TAT *
REPORT DUE DATE ______
* SUBJECT TO RUSH FEES

MATRIX TYPE: AQUEOUS MATRIX / NONAQUEOUS MATRIX / OIL MATRIX / AIR MATRIX

REQUIRED ANALYSES — NUMBER OF CONTAINERS SUBMITTED

SAMPLING DATE	SAMPLING TIME	SAMPLE IDENTIFICATION	AQUEOUS MATRIX	NONAQUEOUS MATRIX	OIL MATRIX	AIR MATRIX	~~EPA 601/602~~ SPK	~~EPA 624~~ SPK	COD (410.1)	Flouride (340.2)	FC-MF (SM9221-C)	Phenols (420.1)	Metals (200.7) (239.2)	BOD/TSS/TDS (405.1, 160.2, 160.1)	~~pH~~ SPK	~~Oil & Grease~~ SPK
11-5-93	2450	RAFB-SL7-~~6~~-E1	X				SPK ~~3~~	SPK ~~3~~	1	1	1	1	1	1	SPK ~~1~~	SPK ~~2~~

EAS

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
[signature]	10/15	2:00	Steve P. Butler	10/18	1600	[signature]	11-5-93	1700

RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

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RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	S.L. LOG NO.	LABORATORY REMARKS
L Baker	11/6/93	12:20	☒ YES ☐ NO		46283	

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

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P.O. NUMBER	PROJECT NUMBER	PROJECT NAME
	AA002.03	Robins AFB

CLIENT NAME: Engineering - Science
TELEPHONE/FAX NO.: (404) 235-2400
CLIENT ADDRESS: 57 Executive Park South, NE
CITY, STATE, ZIP CODE: Atlanta GA 30329
SAMPLER(S) NAME(S): [signature]
CLIENT PROJECT MANAGER: Alan Bollinger

PAGE 2 OF 2

- [X] STANDARD TAT
- [ ] EXPEDITED TAT *

REPORT DUE DATE ______

* SUBJECT TO RUSH FEES

MATRIX TYPE / REQUIRED ANALYSES — NUMBER OF CONTAINERS SUBMITTED

SAMPLING DATE	SAMPLING TIME	SAMPLE IDENTIFICATION	AQUEOUS MATRIX	NONAQUEOUS MATRIX	OIL MATRIX	AIR MATRIX	~~Cyanide~~ SPK	Base Neutrals/Acids (625)	PAH (610)	Pesticides (608)		NO3 NO2 Total Phosphorus (353.2, 365.4)	NH3 + Org Nitrogen	TKN (350.3, 351.2)		
11-5-93	2450	RAFB-SL7-C-E1	X				SPK 1	2	1	1	-	1	-	-	-	

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
Bacon	10/15	2:00	Steven P. Kistler	10/18	1600	E T	11-5-93	1700

RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

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RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	S.L. LOG NO.	LABORATORY REMARKS
J Baker	11/6/93	12:20	[X] YES [ ] NO		46283	

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

P.O. NUMBER	PROJECT NUMBER	PROJECT NAME
	AA002.03	Robins AFB

CLIENT NAME: Engineering - Science
TELEPHONE/FAX NO.: (404) 235-2400
CLIENT ADDRESS: 57 Executive Park, South NE
CITY, STATE, ZIP CODE: Atlanta GA 30329
SAMPLER(S) NAME(S): E ~~—~~ for Brian Jeter
CLIENT PROJECT MANAGER: Alan Bollinger

PAGE 1 OF 2

- [X] STANDARD TAT
- [ ] EXPEDITED TAT *

REPORT DUE DATE ______

* SUBJECT TO RUSH FEES

REQUIRED ANALYSES / NUMBER OF CONTAINERS SUBMITTED

SAMPLING DATE	SAMPLING TIME	SAMPLE IDENTIFICATION	AQUEOUS MATRIX	NONAQUEOUS MATRIX	OIL MATRIX	AIR MATRIX	~~EPA 601/1023~~ SPK	~~EPA 624~~ OK	CoD (410.1)	Flouride (340.2)	FC-MF (sm9221-C)	Penols (420.1)	metals (200.7, 239.2)	BOD/TSS/TDS (405.1)/(160.2, 160.1)	~~pH~~ SPK	~~oil & Grease~~ SPK
11-5-93	0105	RAFB-SL8-C-E1	X				~~3~~	~~3~~	1	1	1	1	1	1	~~1~~	~~2~~

E.A.B.

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
[signature]	10/15	2:00	Alex P. Kistler	10/18	1600	E [signature]	11-5-93	1700
RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

FOR SAVANNAH LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	S.L. LOG NO.	LABORATORY REMARKS
L Baker	11/6/93	12:20	[X] YES [ ] NO		46283	

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- [ ] 6712 Benjamin Road, Suite 100, Tampa, FL 33634 — Phone: (813) 885-7427 — Fax (813) 885-7049

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

P.O. NUMBER:
PROJECT NUMBER: AADD 2.03
PROJECT NAME: Robins AFB
CLIENT NAME: Engineering - Science
TELEPHONE/FAX NO.: (404) 235-2400
CLIENT ADDRESS: 57 Executive Park, South, N.E.
CITY, STATE, ZIP CODE: Atlanta GA 30329
SAMPLER(S) NAME(S): for Brian Jeteiz
CLIENT PROJECT MANAGER: Alan Bollinger

PAGE 2 OF 2

- [X] STANDARD TAT
- [ ] EXPEDITED TAT *

REPORT DUE DATE

* SUBJECT TO RUSH FEES

MATRIX TYPE: AQUEOUS MATRIX / NONAQUEOUS MATRIX / OIL MATRIX / AIR MATRIX

REQUIRED ANALYSES / NUMBER OF CONTAINERS SUBMITTED

SAMPLING DATE	SAMPLING TIME	SAMPLE IDENTIFICATION	AQUEOUS MATRIX	NONAQUEOUS MATRIX	OIL MATRIX	AIR MATRIX	~~Cyanide~~ SK	Base Neutrals/Acids (625)	PAH (610)	Pesticides (608)	NO3 NO2 Total Phosphoros (353.2) 365.4	NH3 + org nitrogen (350.3 351.2) TKN			
11-5-93	0105	RAFB-SL8-C-E1	X				6/94 X	2	1	1	—	1	—	—	—

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
Bacon	10/15	2:10	Alex P. Kistler	10/18	1600		11-5-93	1700
RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

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RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	S.L. LOG NO.	LABORATORY REMARKS
L Baker	11/6/93	12:20	[X] YES [ ] NO		46283	

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- [ ] 6712 Benjamin Road, Suite 100, Tampa, FL 33634 — Phone: (813) 885-7427 — Fax (813) 885-7049

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

P.O. NUMBER	PROJECT NUMBER	PROJECT NAME
	AA002.03	Robins AFB

CLIENT NAME: Engineering - Science
TELEPHONE/FAX NO.: (404) 235-2400
CLIENT ADDRESS: 57 Executive Park, South, NE
CITY, STATE, ZIP CODE: Atlanta GA 30329
SAMPLER(S) NAME(S): [signature]
CLIENT PROJECT MANAGER: Alan Bollinger

PAGE 1 OF 2

[X] STANDARD TAT
[ ] EXPEDITED TAT *

REPORT DUE DATE ______
* SUBJECT TO RUSH FEES

MATRIX TYPE / REQUIRED ANALYSES / NUMBER OF CONTAINERS SUBMITTED

SAMPLING DATE	SAMPLING TIME	SAMPLE IDENTIFICATION	AQUEOUS MATRIX	NONAQUEOUS MATRIX	OIL MATRIX	AIR MATRIX	~~EPA 601/602~~ SPK	~~EPA 624~~ SPK	COD (410.1)	Flouride (340.2)	FC-MF (SM9221-C)	Penols (420.1)	Metals (200.7)	BOD/TSS/TDS (405.1, 160.2, 160.1)	~~DAT~~ SPK	~~Oil & Grease~~ SPK
11-5-93	2430	RAFB-SW16-6-E1	X				~~3~~ SPK	~~3~~ SPK	1	1	1	1	1	1	~~X~~ SPK	~~2~~ SPK

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
Bacon	10/15	2:00	Steve P. Kistler	10/18	1600	[signature]	11-5-93	1700

RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

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RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	S.L. LOG NO.
J Baker	11/6/93		[X] YES [ ] NO	/	416283

LABORATORY REMARKS

RECD DEC 08 1993

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AA002.03 Robins AFB

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

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☐ 900 Lakeside Drive, Mobile, AL 36693 — Phone: (205) 666-6633 — Fax (205) 666-6696
☐ 6712 Benjamin Road, Suite 100, Tampa, FL 33634 — Phone: (813) 885-7427 — Fax (813) 885-7049

P.O. NUMBER:
PROJECT NUMBER: AA002.03
PROJECT NAME: Robins AFB
CLIENT NAME: Engineering-Science
TELEPHONE/FAX NO.: (404) 235-2400
CLIENT ADDRESS: 57 Executive Park South NE
CITY, STATE, ZIP CODE: Atlanta Ga 30329
SAMPLER(S) NAME(S):
CLIENT PROJECT MANAGER: Alan Bollinger

☒ STANDARD TAT
☐ EXPEDITED TAT *

REPORT DUE DATE ______

* SUBJECT TO RUSH FEES

MATRIX TYPE: AQUEOUS MATRIX / NONAQUEOUS MATRIX / OIL MATRIX / AIR MATRIX

REQUIRED ANALYSES — NUMBER OF CONTAINERS SUBMITTED

SAMPLING DATE	SAMPLING TIME	SAMPLE IDENTIFICATION	AQUEOUS MATRIX	NONAQUEOUS MATRIX	OIL MATRIX	AIR MATRIX	~~Cyanide~~ spk	Base Neutrals	Acids	PAH (625)	Pesticides (610) (608)	NO3 TNO2 Total Phosphoros (353.2) 365.4)	NH3+org Nitrogen	TKN (350.3, 351.2)		
11-5-93	2430	RAFB-SL16-C-C1	X				X	2	1	1	–	1	–	–	–	

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RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
[signature]	10/15	2:00	Steve P. Kistler	10/19	1600	[signature]	11-5-93	1700

RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

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RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	S.L. LOG NO.	LABORATORY REMARKS
L Baker	11/6/93	12:20	☑ YES ☐ NO		46283	

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ENGINEERING-SCIENCE

CHAIN OF CUSTODY RECORD

1211

ES JOB NUMBER: AA002.03

PROJECT NAME\LOCATION: Robins AFB, Warner Robins, GA

SAMPLER(S): (Signature) Alan Bollinger

PRESERVATIVE REQUIRED: HCL, HCL

SHIP TO: Savannah Labs, 5102 LaRoche Ave, Savannah, GA 31404

Date	Time	Sample Description	Number of Containers	ANALYSES REQUIRED: EPA 601/602	EPA 624	Sample Type	Matrix	Remarks
11-5-93	~~2400~~ 25 ES	RAFB-TB1-G-E1	EAS ~~4~~ 6	X	X	G C	W	
11-5-93	2400	RAFB-SL1-G-E1	6	X	X	G C	W	
11-5-93	2430	RAFB-SL2-G-E1	6	X	X	G C	W	
11-5-93	0100	RAFB-SL3-G-E1	6	X	X	G C	W	
11-5-93	2448	RAFB-SL4-G-E1	6	X	X	G C	W	
11-5-93	2435	RAFB-SL5-G-E1	6	X	X	G C	W	
11-5-93	2415	RAFB-SL6-G-E1	18	X	X	G C	W	MS/MSD
11-5-93	2450	RAFB-SL7-G-E1	6	X	X	G C	W	
11-5-93	0105	RAFB-SL8-G-E1	6	X	X	G C	W	
11-5-93	2430	RAFB-SL16-G-E1	6	X	X	G C	W	
						G C		
						G C		
						G C		
						G C		
						G C		
						G C		
						G C		
						G C		

EAB

REC'D DEC 08 1993

Relinquished by: (Signature)	Date/Time		Received for Laboratory by:	Date/Time		Remarks:
[signature]	11-5-93	1700	J Baker 46283	11/6/93	12:20	Airbill#: 8446985234

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Lab retains original and sends yellow and pink copies with analytical report.

G - Grab
C - Composite

1219

ENGINEERING-SCIENCE
CHAIN OF CUSTODY RECORD

ES JOB NUMBER: AA 002.03

PROJECT NAME\LOCATION: Robins AFB, Warner Robins GA

SAMPLER(S): (Signature) E [signature] for Jeff Albert

SHIP TO: Savannah Labs
5102 LaRoche Ave
Savannah GA 31404

Date	Time	Sample Description	Number of Containers	EPA 601+602 (HCL)	EPA 624 (HCL)	Cyanide (NaOH)	pH (4oC)	O+Grease (H2SO4)	Sample Type	Matrix	Remarks
11-5-93	2400	RAFB-SL1-G-E1	4			X	X	X	G C	W	
									G C	W	
									G C		
									G C		
									G C		
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EAS

REC'D DEC 08 1993

Relinquished by: (Signature)	Date/Time		Received for Laboratory by:	Date/Time		Remarks:
E [signature]	11-5 93	1700	J Baker 46283	11/6/93	12:20	Airbill#: 844694523-4

Distribution: Original, yellow and pink sheets sent to lab. Gold retained by field personnel. Lab retains original and sends yellow and pink copies with analytical report.

G - Grab
C - Composite

1217

ENGINEERING-SCIENCE
CHAIN OF CUSTODY RECORD

ES JOB NUMBER: AA 002.03

PROJECT NAME\LOCATION: Robins AFB, Warner Robins, GA

SAMPLER(S): (Signature) [signature] for Jeffrey Albert

PRESERVATIVE REQUIRED: HCL, HCL, NaOH, 4°C, H_2SO_4

SHIP TO: Savannah Labs
5102 LaRoche Ave
Savannah GA 31404

Date	Time	Sample Description	Number of Containers	EPA 601+602	EPA 624	Cyanide	pH	Oil+Grease				Sample Type	Matrix	Remarks
11-5-93	2430	RAFB-SL2-G-E1	4			X	X	X				G C	W	
												~~G C~~	W	
												G C		
												G C		
												G C		
												G C		
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EAS

RECD DEC 08 1993

Relinquished by: (Signature)	Date/Time		Received for Laboratory by:	Date/Time		Remarks:
[signature]	11-5 93	1700	L Baker 46283	11/6/93	12:20	Airbill#: 844698523

Distribution: Original, yellow and pink sheets sent to lab. Gold retained by field personnel. Lab retains original and sends yellow and pink copies with analytical report.

G - Grab
C - Composite

ENGINEERING-SCIENCE
CHAIN OF CUSTODY RECORD

1221

ES JOB NUMBER: AA002.03

PROJECT NAME\LOCATION: Robins AFB, Warner-Robins, Ga.

SAMPLER(S): (Signature) Alan Bellin

SHIP TO: Savannah, Ga.
5102 La Roche Ave
Savannah, Ga 31404

PRESERVATIVE REQUIRED: HCL, HCL, NaOH, 4°C, H_2SO_4

ANALYSES REQUIRED

Date	Time	Sample Description	Number of Containers	EPA 601/602	EPA 624	Cyanide	PH	Oil + Grease					Sample Type	Matrix	Remarks
11-5-93	0100	RAFB-SL3-G-E1	4			X	X	X					G C	W	
													G C	W	
													G C		
													G C		
													G C		
													G C		
													G C		
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RECD DEC 08 1993

Relinquished by: (Signature)	Date/Time		Received for Laboratory by:	Date/Time		Remarks:
E [signature]	11-5 93	1200	L Baker 46283	11/6/93	LAB ~~10:22~~ 12:20	Airbill#: 844698 5234

Distribution: Original, yellow and pink sheets sent to lab. Gold retained by field personnel.
Lab retains original and sends yellow and pink copies with analytical report.

G - Grab
C - Composite

1214

ENGINEERING-SCIENCE
CHAIN OF CUSTODY RECORD

ES JOB NUMBER: AA002.03

PROJECT NAME\LOCATION: Robins AFB, Warner-Robins, GA

SAMPLER(S): (Signature) Alan Ballinger

PRESERVATIVE REQUIRED: HCL, HCL, NaOH, 4°C, H2SO4

SHIP TO: Savannah Labs
5102 LaRoche Ave
Savannah, GA 31404

Date	Time	Sample Description	Number of Containers	EPA 601/602	EPA 624	CYANIDE	PH	Oil & Grease			Sample Type	Matrix	Remarks
11-5-93	2448	RAFB-SL4-G-E1	4			X	X	X			G C	W	
											G C	W	
											G C		
											G C		
											G C		
											G C		
											G C		
											G C		
											G C		
											G C		
											G C		
											G C		
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											G C		
											G C		
											G C		
											G C		
											G C		

EAB

RECD DEC 08 1993

Relinquished by: (Signature)	Date/Time		Received for Laboratory by:	Date/Time		Remarks:
[signature]	11-5 93	1200	L Baker 46283	11/6/93	12:20	Airbill#: 8446985234

Distribution: Original, yellow and pink sheets sent to lab. Gold retained by field personnel.
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G - Grab
C - Composite

1215

ENGINEERING-SCIENCE
CHAIN OF CUSTODY RECORD

ES JOB NUMBER: AA002.03

PROJECT NAME\LOCATION: Robins AFB, Warner-Robins Ga

SAMPLER(S): (Signature) Alan Ballenger

SHIP TO: Savannah Labs
5102 La Roche Ave.
Savannah, Ga 31404

PRESERVATIVE REQUIRED: HCL, HCL, NaOH, 4°C, H_2SO_4

Date	Time	Sample Description	Number of Containers	EPA 601+602	EPA 624	Cyanide	PH	Oil + Grease				Sample Type	Matrix	Remarks
11-5-93	2435	RAFB-SLS-G-E1	4			X	X	X				G C	W	
												~~G C~~	~~W~~	
												G C		
												G C		
												G C		
												G C		
												G C		
												G C		
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												G C		
												~~G C~~		

EAS

RECD DEC 08 1993

Relinquished by: (Signature)	Date/Time		Received for Laboratory by:	Date/Time		Remarks:
E [signature]	11-5 93	1700	L Baker 46283	11/6/93	12:20	Airbill#: 8446485234

Distribution: Original, yellow and pink sheets sent to lab. Gold retained by field personnel. Lab retains original and sends yellow and pink copies with analytical report.

G - Grab
C - Composite

ENGINEERING-SCIENCE
CHAIN OF CUSTODY RECORD

1224

ES JOB NUMBER	PROJECT NAME\LOCATION	SHIP TO:
AA002.03	Robins AFB GA	

SAMPLER(S): (Signature) E. [signature]

PRESERVATIVE REQUIRED: H2SO4, H2SO4, NaOH, HNO3, 4C, H2SO4, H2SO4, H2SO4, 4C, 4C

Date	Time	Sample Description	Number of Containers	Oil+Grease	Cyanide	200.7/239.2	340.2	350.3/351.2	353.2/365.4	420.1	610/625	608	Sample Type	Matrix	Remarks
11-5-93	2415	RAFB-SL6-G-E1	3	X	X								G C	H2O	
11-5-93	2415	RAFB-SL6-C-E1	8			X	X	X	X	X	X	X	G C	H2O	
													G C		
													G C		
													G C		
													G C		
													G C		
													G C		
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													G C		

E.W.S.

RECD DEC 08 1993

Relinquished by: (Signature)	Date/Time		Received for Laboratory by:	Date/Time		Remarks:
E. [signature]	11-5 93	1700	J Baker 46283	11/6/93	12:20	Airbill#: 8446985234

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ENGINEERING-SCIENCE

CHAIN OF CUSTODY RECORD

ES JOB NUMBER: AA002.03

PROJECT NAME\LOCATION: Robins AFB GA

SAMPLER(S): (Signature) [signature]

SHIP TO:

Date	Time	Sample Description	Number of Containers	Oil&Grease (H2SO4)	Cyanide (NaOH)	203.7 231.2 (HNO3)	340.2 (4C)	350.3 351.2 (H2SO4)	353.2 365.4 (H2SO4)	420.1 [illegible] (H2SO4)	610 625 (4C)	608 (4C)	Sample Type	Matrix	Remarks
11-5-93	2415	RAFB-SL6-G-E1	3	X	X								G C	H2O	ms/msD
11-5-93	2415	RAFB-SL6-C-E1	8			X	X	X	X	X	X	X	G C	H2O	ms/msD
													G C		
													G C		
													G C		
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Relinquished by: (Signature)	Date/Time		Received for Laboratory by:	Date/Time		Remarks:
[signature]	11-5 93	1700	L Baker 46283	11/6/93	12:20	Airbill#: 844698 5234

Distribution: Original, yellow and pink sheets sent to lab. Gold retained by field personnel. Lab retains original and sends yellow and pink copies with analytical report.

G - Grab
C - Composite

ENGINEERING-SCIENCE
CHAIN OF CUSTODY RECORD

1218

ES JOB NUMBER: AA002.03

PROJECT NAME\LOCATION: Robins AFB, Warner-Robins, GA

SAMPLER(S): (Signature) [signature]

SHIP TO: Savannah Labs
5102 La Roche Ave
Savannah, Ga
31404

Date	Time	Sample Description	Number of Containers	HCL / EPA 601/602	HCL / EPA 624	NaOH / Cyanide	4°C / pH	H_2SO_4 / Oil+Grease					Sample Type	Matrix	Remarks
11-5-93	2415	RAFB-SL6-G-E1	4			X	X	X					G C	W	
													G C	W	
													G C		
													G C		
													G C		
													G C		
													G C		
													G C		
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Relinquished by: (Signature)	Date/Time		Received for Laboratory by:	Date/Time		Remarks:
[signature]	11-5-93	1700	L Baker 46283	11/6/93	12:20	Airbill#: 8446985237

Distribution: Original, yellow and pink sheets sent to lab. Gold retained by field personnel.
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G - Grab
C - Composite

ENGINEERING-SCIENCE
CHAIN OF CUSTODY RECORD

1220

ES JOB NUMBER: AA002.03

PROJECT NAME\LOCATION: Robins AFB, Warner Robins GA

SAMPLER(S): (Signature) [signature]

SHIP TO: Savannah Labs
5102 LaRoche Ave
Savannah GA 31404

PRESERVATIVE REQUIRED / ANALYSES REQUIRED

Date	Time	Sample Description	Number of Containers	EPA 601+602 (HCL)	EPA 624 (HCL)	Cyanide (NaOH)	PH (4oC)	Oil + Grease (H2SO4)					Sample Type	Matrix	Remarks
11-5-93	1450	RAFB-SL7-G-E1	4			X	X	X					(G) C	W	
													G C	W	
													G C		
													G C		
													G C		
													G C		
													G C		
													G C		
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													G C		

RECD DEC 08 1993

EDG

Relinquished by: (Signature)	Date/Time		Received for Laboratory by:	Date/Time		Remarks:
[signature]	11-5-93	1700	L Baker 46283	11/6/93	12:20	Airbill#: 8446985234

Distribution: Original, yellow and pink sheets sent to lab. Gold retained by field personnel.
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G - Grab
C - Composite

ENGINEERING-SCIENCE

CHAIN OF CUSTODY RECORD

1222

ES JOB NUMBER: AA002.03

PROJECT NAME\LOCATION: Robins AFB GA

SAMPLER(S): (Signature) E [signature] for Brian Jeter

SHIP TO: Savannah Labs

PRESERVATIVE REQUIRED: NaOH, 4C, H_2SO_4

ANALYSES REQUIRED: Cyanide, pH, Oil grease

Date	Time	Sample Description	Number of Containers	Cyanide	pH	Oil grease	Sample Type	Matrix	Remarks
11-5-93	0105	RAFB-SL8-G-E1	4	X	X	X	G C	H2O	
							G C		
							G C		
							G C		
							G C		
							G C		REC'D DEC 08 1993
							G C		
							G C		
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							G C		
							G C		
							G C		

EAB

Relinquished by: (Signature)	Date/Time		Received for Laboratory by:	Date/Time		Remarks:
E [signature]	11-5 93	1200	J Baker 46283	11/6/93	12:20	Airbill#: 8446985234

Distribution: Original, yellow and pink sheets sent to lab. Gold retained by field personnel. Lab retains original and sends yellow and pink copies with analytical report.

G - Grab
C - Composite

1216

ENGINEERING-SCIENCE
CHAIN OF CUSTODY RECORD

ES JOB NUMBER: AA002.03

PROJECT NAME\LOCATION: Robins AFB GA

SAMPLER(S): (Signature) E

PRESERVATIVE REQUIRED: NaOH, 4C, H2SO4

ANALYSES REQUIRED: Cyanide, PH, Oil/Gres

SHIP TO: Savannah Labs, 5102 LaRoche Ave, Savannah GA 31404

Date	Time	Sample Description	Number of Containers	Cyanide	PH	Oil/Gres							Sample Type	Matrix	Remarks
11-5-93	2430	RAFB-SL16-G-E1	4	X	X	X							G C	H20	
													G C		
													G C		
													G C		
													G C		
													G C		
													G C		
													G C		
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LWS

RECD DEC 08 1993

Relinquished by: (Signature)	Date/Time		Received for Laboratory by:	Date/Time		Remarks:
E	11-5 93	1700	L Baker 46283	11/6/93	12:20	Airbill#: 8446985234

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LABORATORY DATA PACKAGE FOR THE DECEMBER 4, 1993 RAIN EVENT

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SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S3-46908

Received: 07 DEC 93

Mr. John Schendel
Engineering Science, Inc.
57 Executive Park South, Suite 500
Atlanta, Georgia 30329

Project: AT002.03 Robbins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46908-1	RAFB-SL9-G-E1	12-04-93
46908-2	RAFB-SL10-G-E1	12-04-93
46908-3	RAFB-SL11-G-E1	12-04-93
46908-4	RAFB-SL12-G-E1	12-04-93
46908-5	RAFB-SL13-G-E1	12-04-93

PARAMETER	46908-1	46908-2	46908-3	46908-4	46908-5
Purgeables (624)					
Benzene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Bromodichloromethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Bromoform, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Bromomethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Carbon Tetrachloride, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Chlorobenzene, ug/l	<1.0	<1.0	8.9	<1.0	<1.0
Chloroethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
2-Chloroethylvinyl Ether, ug/l	<10	<10	<10	<10	<10
Chloroform, ug/l	2.4	<1.0	<1.0	<1.0	<1.0
Chloromethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Dibromochloromethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene, ug/l	<1.0	<1.0	3.1	<1.0	<1.0
1,3-Dichlorobenzene, ug/l	<1.0	<1.0	1.0	<1.0	<1.0
1,4-Dichlorobenzene, ug/l	<1.0	<1.0	1.4	<1.0	<1.0
1,1-Dichloroethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Trans-1,2-Dichloroethene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Cis-1,2-Dichloroethene, ug/l	<1.0	<1.0	6.1	<1.0	<1.0

RECD JAN 11 1994

SL ***SAVANNAH LABORATORIES***
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S3-46908

Received: 07 DEC 93

Mr. John Schendel
Engineering Science, Inc.
57 Executive Park South, Suite 500
Atlanta, Georgia 30329

Project: AT002.03 Robbins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46908-1	RAFB-SL9-G-E1	12-04-93
46908-2	RAFB-SL10-G-E1	12-04-93
46908-3	RAFB-SL11-G-E1	12-04-93
46908-4	RAFB-SL12-G-E1	12-04-93
46908-5	RAFB-SL13-G-E1	12-04-93

PARAMETER	46908-1	46908-2	46908-3	46908-4	46908-5
1,2-Dichloropropane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Cis-1,3-Dichloropropene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Trans-1,3-Dichloropropene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Methylene Chloride (Dichloromethane), ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Tetrachloroethene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene, ug/l	<1.0	1.1	<1.0	<1.0	1.5
1,1,1-Trichloroethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethylene, ug/l	1.0	<1.0	<1.0	<1.0	<1.0
Trichlorofluoromethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Xylenes, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Acrolein, ug/L	<50	<50	<50	<50	<50
Acrylonitrile, ug/l	<50	<50	<50	<50	<50
Surrogate - Toluene-d8	93 %	92 %	93 %	90 %	93 %
Surrogate - 4-Bromofluorobenzene	96 %	95 %	95 %	96 %	95 %
Surrogate - 1,2-Dichloroethane-d4	106 %	104 %	107 %	106 %	105 %
Date Analyzed	12.18.93	12.18.93	12.18.93	12.18.93	12.18.93

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SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S3-46908

Received: 07 DEC 93

Mr. John Schendel
Engineering Science, Inc.
57 Executive Park South, Suite 500
Atlanta, Georgia 30329

Project: AT002.03 Robbins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46908-1	RAFB-SL9-G-E1	12-04-93
46908-2	RAFB-SL10-G-E1	12-04-93
46908-3	RAFB-SL11-G-E1	12-04-93
46908-4	RAFB-SL12-G-E1	12-04-93
46908-5	RAFB-SL13-G-E1	12-04-93

PARAMETER	46908-1	46908-2	46908-3	46908-4	46908-5
Cyanide (335.3)					
Cyanide (335.3), mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
Date Analyzed	12.15.93	12.15.93	12.15.93	12.15.93	12.15.93
pH (150.1)					
pH, units	6.0	6.4	6.1	8.3	6.3
Date Analyzed	12.07.93	12.07.93	12.07.93	12.07.93	12.07.93
Oil & Grease					
Oil & Grease (413.2), mg/l	<1.0	<1.0	<1.0	3.6	<1.0
Date Analyzed	12.22.93	12.22.93	12.22.93	12.22.93	12.22.93

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SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

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Atlanta, Georgia 30329

Project: AT002.03 Robbins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46908-6	RAFB-SL9-C-E1	12-04-93
46908-7	RAFB-SL10-C-E1	12-04-93
46908-8	RAFB-SL11-C-E1	12-04-93
46908-9	RAFB-SL12-C-E1	12-04-93
46908-10	RAFB-SL13-C-E1	12-04-93

PARAMETER	46908-6	46908-7	46908-8	46908-9	46908-10
Chemical Oxygen Demand (410.2)					
Chemical Oxygen Demand, mg/l	35	<20	37	69	28
Date Analyzed	12.08.93	12.08.93	12.08.93	12.08.93	12.08.93
Fluoride (340.2)					
Fluoride, mg/l	<0.20	<0.20	<0.20	<0.20	<0.20
Date Analyzed	12.16.93	12.16.93	12.16.93	12.16.93	12.16.93
Biochemical Oxygen Demand (5-Day) (405.1)					
Biochemical Oxygen Demand (5 Day), mg/l	<2.0	<2.0	2.9	13	<2.0
Date Analyzed	12.07.93	12.07.93	12.07.93	12.07.93	12.07.93
Suspended Solids (160.2)					
Suspended Solids (160.2), mg/l	5.5	<5.0	75	190	<5.0
Date Analyzed	12.08.93	12.08.93	12.08.93	12.08.93	12.08.93
Total Dissolved Solids (160.1)					
Total Dissolved Solids, mg/l	63	40	56	49	41
Date Analyzed	12.09.93	12.09.93	12.09.93	12.09.93	12.09.93
Fecal Coliform (MT)					
Fecal Coliform MT, col/100mls	230	<2.0	1300	70	20
Date Analyzed	12.07.93	12.07.93	12.07.93	12.07.93	12.07.93

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& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S3-46908
Revised 1/12/94
Received: 07 DEC 93

Mr. John Schendel
Engineering Science, Inc.
57 Executive Park South, Suite 500
Atlanta, Georgia 30329

Project: AT002.03 Robbins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46908-6	RAFB-SL9-C-E1	12-04-93
46908-7	RAFB-SL10-C-E1	12-04-93
46908-8	RAFB-SL11-C-E1	12-04-93
46908-9	RAFB-SL12-C-E1	12-04-93
46908-10	RAFB-SL13-C-E1	12-04-93

PARAMETER	46908-6	46908-7	46908-8	46908-9	46908-10
Phenolics, Total Recoverable (420.2)					
Phenolics,Total Recoverable, mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
Date Analyzed	12.20.93	12.20.93	12.31.93	12.31.93	12.31.93
Cadmium (200.7)					
Cadmium (200.7), mg/l	<0.0050	<0.0050	<0.0050	0.074	<0.0050
Date Analyzed	12.28.93	12.28.93	12.28.93	12.28.93	12.28.93
Chromium (200.7)					
Chromium (200.7), mg/l	<0.010	<0.010	<0.010	0.054	<0.010
Date Analyzed	12.28.93	12.28.93	12.28.93	12.28.93	12.28.93
Copper (200.7)					
Copper (200.7), mg/l	<0.020	<0.020	<0.020	0.065	<0.020
Date Analyzed	12.28.93	12.28.93	12.28.93	12.28.93	12.28.93
Nickel (200.7)					
Nickel (200.7), mg/l	<0.020	<0.020	<0.020	<0.020	<0.020
Date Analyzed	12.28.93	12.28.93	12.28.93	12.28.93	12.28.93
Silver (200.7)					
Silver (200.7), mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
Date Analyzed	12.28.93	12.28.93	12.28.93	12.28.93	12.28.93
Zinc (200.7)					
Zinc (200.7), mg/l	<0.020	0.021	0.034	0.27	<0.020
Date Analyzed	12.28.93	12.28.93	12.28.93	12.28.93	12.28.93

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SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S3-46908

Received: 07 DEC 93

Mr. John Schendel
Engineering Science, Inc.
57 Executive Park South, Suite 500
Atlanta, Georgia 30329

Project: AT002.03 Robbins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46908-6	RAFB-SL9-C-E1	12-04-93
46908-7	RAFB-SL10-C-E1	12-04-93
46908-8	RAFB-SL11-C-E1	12-04-93
46908-9	RAFB-SL12-C-E1	12-04-93
46908-10	RAFB-SL13-C-E1	12-04-93

PARAMETER	46908-6	46908-7	46908-8	46908-9	46908-10
Lead (239.2)					
Lead (239.2), mg/l	<0.0050	<0.0050	0.0057	0.099	<0.0050
Date Analyzed	12.28.93	12.28.93	12.28.93	12.28.93	12.28.93
Total Kjeldahl Nitrogen (351.2)					
Total Kjeldahl Nitrogen-N, mg/l	0.84	0.65	0.65	1.1	0.71
Date Analyzed	12.30.93	12.30.93	12.30.93	12.30.93	12.30.93
Ammonia-N (350.1)					
Ammonia-N, mg/l	0.12	0.15	0.26	0.13	0.084
Date Analyzed	12.22.93	12.22.93	12.22.93	12.22.93	12.22.93
Nitrate + Nitrite-N (353.2)					
Nitrate + Nitrite-N, mg/l	0.41	0.063	0.078	0.28	0.056
Date Analyzed	12.21.93	12.21.93	12.21.93	12.21.93	12.21.93
Nitrogen (Organic) (351.2/350.1)					
Nitrogen(Organic) (351.2/350.1), mg/l	0.72	0.50	0.39	0.97	0.63
Date Analyzed	12.30.93	12.30.93	12.30.93	12.30.93	12.30.93
Total Phosphorous (365.4)					
Total Phosphorus (365.4), mg/l	<0.10	<0.10	0.15	0.16	<0.10
Date Analyzed	12.30.93	12.30.93	12.30.93	12.30.93	12.30.93

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46908-6	RAFB-SL9-C-E1	12-04-93
46908-7	RAFB-SL10-C-E1	12-04-93
46908-8	RAFB-SL11-C-E1	12-04-93
46908-9	RAFB-SL12-C-E1	12-04-93
46908-10	RAFB-SL13-C-E1	12-04-93

PARAMETER	46908-6	46908-7	46908-8	46908-9	46908-10
BN-A Extractables (625)					
Acenaphthene, ug/l	<10	<10	<10	<10	<10
Acenaphthylene, ug/l	<10	<10	<10	<10	<10
Anthracene, ug/l	<10	<10	<10	<10	<10
Benzo(a)Anthracene, ug/l	<10	<10	<10	<10	<10
Benzo(b)fluoranthene, ug/l	<10	<10	<10	<10	<10
Benzo(k)fluoranthene, ug/l	<10	<10	<10	<10	<10
Benzo(a)pyrene, ug/l	<10	<10	<10	<10	<10
Benzo(g,h,i)perylene, ug/l	<10	<10	<10	<10	<10
Benzyl butyl phthalate, ug/l	<10	<10	<10	<10	<10
bis(2-Chloroethyl)ether, ug/l	<10	<10	<10	<10	<10
bis(2-Chloroethoxy)methane, ug/l	<10	<10	<10	<10	<10
bis(2-Ethylhexyl)phthalate, ug/l	<10	<10	<10	<10	<10
Bis(2-chloroisopropyl)ether, ug/l	<10	<10	<10	<10	<10
4-Bromophenyl-phenyl-ether, ug/l	<10	<10	<10	<10	<10
2-Chloronaphthalene, ug/l	<10	<10	<10	<10	<10
4-Chlorophenyl-phenyl ether, ug/l	<10	<10	<10	<10	<10
Chrysene, ug/l	<10	<10	<10	<10	<10
Dibenz(a,h)anthracene, ug/l	<10	<10	<10	<10	<10
Di-n-butylphthalate, ug/l	<10	<10	<10	<10	<10

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LOG NO: S3-46908

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46908-6	RAFB-SL9-C-E1	12-04-93
46908-7	RAFB-SL10-C-E1	12-04-93
46908-8	RAFB-SL11-C-E1	12-04-93
46908-9	RAFB-SL12-C-E1	12-04-93
46908-10	RAFB-SL13-C-E1	12-04-93

PARAMETER	46908-6	46908-7	46908-8	46908-9	46908-10
1,3-Dichlorobenzene, ug/l	<10	<10	<10	<10	<10
1,2-Dichlorobenzene, ug/l	<10	<10	<10	<10	<10
1,4-Dichlorobenzene, ug/l	<10	<10	<10	<10	<10
3,3'-Dichlorobenzidine, ug/l	<20	<20	<20	<20	<20
Diethylphthalate, ug/l	<10	<10	<10	<10	<10
Dimethylphthalate, ug/I	<10	<10	<10	<10	<10
2,4-Dinitrotoluene, ug/l	<20	<20	<20	<20	<20
2,6-Dinitrotoluene, ug/l	<20	<20	<20	<20	<20
Di-n-octylphthalate, ug/l	<10	<10	<10	<10	<10
Fluoranthene, ug/l	<10	<10	<10	<10	<10
Fluorene, ug/l	<10	<10	<10	<10	<10
Hexachlorobenzene, ug/l	<10	<10	<10	<10	<10
Hexachlorobutadiene, ug/l	<10	<10	<10	<10	<10
Hexachloroethane, ug/l	<2.0	<2.0	<2.0	<2.0	<2.0
Indeno(1,2,3-cd)pyrene, ug/l	<10	<10	<10	<10	<10
Isophorone, ug/l	<10	<10	<10	<10	<10
Naphthalene, ug/l	<10	<10	<10	<10	<10
Nitrobenzene, ug/l	<10	<10	<10	<10	<10
N-Nitrosodi-N-Propylamine, ug/l	<10	<10	<10	<10	<10
Phenanthrene, ug/l	<10	<10	<10	<10	<10

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LOG NO: S3-46908
Rev-3 1/24/94
Received: 07 DEC 93

Mr. John Schendel
Engineering Science, Inc.
57 Executive Park South, Suite 500
Atlanta, Georgia 30329

Project: AT002.03 Robbins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46908-6	RAFB-SL9-C-E1	12-04-93
46908-7	RAFB-SL10-C-E1	12-04-93
46908-8	RAFB-SL11-C-E1	12-04-93
46908-9	RAFB-SL12-C-E1	12-04-93
46908-10	RAFB-SL13-C-E1	12-04-93

PARAMETER	46908-6	46908-7	46908-8	46908-9	46908-10
Pyrene, ug/l	<10	<10	<10	<10	<10
1,2,4-Trichlorobenzene, ug/l	<10	<10	<10	<10	<10
4-Chloro-3-methylphenol, ug/l	<10	<10	<10	<10	<10
2-Chlorophenol, ug/l	<10	<10	<10	<10	<10
2,4-Dichlorophenol, ug/l	<10	<10	<10	<10	<10
2,4-Dimethylphenol, ug/l	<10	<10	<10	<10	<10
2,4-Dinitrophenol, ug/l	<50	<50	<50	<50	<50
2-Methyl-4,6-dinitrophenol, ug/l	<50	<50	<50	<50	<50
2-Nitrophenol, ug/l	<10	<10	<10	<10	<10
4-Nitrophenol, ug/l	<50	<50	<50	<50	<50
Pentachlorophenol, ug/l	<20	<20	<20	<20	<20
Phenol, ug/l	<10	<10	<10	<10	<10
2,4,6-Trichlorophenol, ug/l	<10	<10	<10	<10	<10
Benzidine, ug/l	<80	<80	<80	<80	<80
Surrogate-PHL	71 %	69 %	88 %	86 %	92 %
Surrogate-2FP	60 %	57 %	72 %	70 %	75 %
Surrogate-TBP	73 %	75 %	94 %	86 %	104 %
Surrogate-NBZ	68 %	68 %	90 %	83 %	95 %
Surrogate-2FBP	72 %	70 %	85 %	78 %	87 %
Surrogate-TPH	50 %	63 %	61 %	49 %	69 %
Date Extracted	12.10.93	12.10.93	12.10.93	12.10.93	12.10.93
Date Analyzed	12.16.93	12.16.93	12.17.93	12.17.93	12.17.93

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LOG NO: S3-46908

Received: 07 DEC 93

Mr. John Schendel
Engineering Science, Inc.
57 Executive Park South, Suite 500
Atlanta, Georgia 30329

Project: AT002.03 Robbins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46908-6	RAFB-SL9-C-E1	12-04-93
46908-7	RAFB-SL10-C-E1	12-04-93
46908-8	RAFB-SL11-C-E1	12-04-93
46908-9	RAFB-SL12-C-E1	12-04-93
46908-10	RAFB-SL13-C-E1	12-04-93

PARAMETER	46908-6	46908-7	46908-8	46908-9	46908-10
Polynuclear Aromatics (610)					
Acenaphthene, ug/l	<10	<10	<10	<10	<10
Acenaphthylene, ug/l	<10	<10	<10	<10	<10
Benzo(a)pyrene, ug/l	<10	<10	<10	<10	<10
Benzo(g,h,i)perylene, ug/l	<10	<10	<10	<10	<10
Benzo(b,k)fluoranthene, ug/l	<10	<10	<10	<10	<10
Chrysene + Benzo(a)anthracene, ug/l	<10	<10	<10	<10	<10
Fluoranthene, ug/l	<10	<10	<10	<10	<10
Fluorene, ug/l	<10	<10	<10	<10	<10
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthracene, ug/l	<10	<10	<10	<10	<10
Naphthalene, ug/l	<10	<10	<10	<10	<10
Phenanthrene + Anthracene, ug/l	<10	<10	<10	<10	<10
Pyrene, ug/l	<10	<10	<10	<10	<10
1-Methylnaphthalene, ug/l	<10	<10	<10	<10	<10
2-Methylnaphthalene, ug/l	<10	<10	<10	<10	<10
Surrogate - 2-Fluorobiphenyl	28.1	19.4	23.2	26.2	21.3
Surrogate - Expected Value, mg/l	50	50	50	50	50
Surrogate - % Actual Recovery	56 %	39 %	46 %	52 %	43 %
Surrogate - Control Limit	27-123 %	27-123 %	27-123 %	27-123 %	27-123 %
Date Extracted	12.09.93	12.09.93	12.09.93	12.09.93	12.09.93
Date Analyzed	12.16.93	12.16.93	12.16.93	12.16.93	12.16.93

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LOG NO: S3-46908

Received: 07 DEC 93

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Atlanta, Georgia 30329

Project: AT002.03 Robbins AFB
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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46908-6	RAFB-SL9-C-E1	12-04-93
46908-7	RAFB-SL10-C-E1	12-04-93
46908-8	RAFB-SL11-C-E1	12-04-93
46908-9	RAFB-SL12-C-E1	12-04-93
46908-10	RAFB-SL13-C-E1	12-04-93

PARAMETER	46908-6	46908-7	46908-8	46908-9	46908-10
Cl-Pesticides/PCB (608)					
Aldrin, ug/l	<0.050	<0.050	<0.050	<0.050	<0.050
alpha-BHC, ug/l	<0.050	<0.050	<0.050	<0.050	<0.050
beta-BHC, ug/l	<0.050	<0.050	<0.050	<0.050	<0.050
gamma-BHC, ug/l	<0.050	<0.050	<0.050	<0.050	<0.050
delta-BHC, ug/l	<0.050	<0.050	<0.050	<0.050	<0.050
Chlordane, ug/l	<0.50	<0.50	<0.50	<0.50	<0.50
4,4'-DDD, ug/l	<0.10	<0.10	<0.10	<0.10	<0.10
4,4'-DDE, ug/l	<0.10	<0.10	<0.10	<0.10	<0.10
4,4'-DDT, ug/l	<0.10	<0.10	<0.10	<0.10	<0.10
Dieldrin, ug/l	<0.10	<0.10	<0.10	<0.10	<0.10
Endosulfan I, ug/l	<0.050	<0.050	<0.050	<0.050	<0.050
Endosulfan II, ug/l	<0.10	<0.10	<0.10	<0.10	<0.10
Endosulfan sulfate, ug/l	<0.10	<0.10	<0.10	<0.10	<0.10
Endrin, ug/l	<0.10	<0.10	<0.10	<0.10	<0.10
Endrin Aldehyde, ug/l	<0.10	<0.10	<0.10	<0.10	<0.10
Heptachlor, ug/l	<0.050	<0.050	<0.050	<0.050	<0.050
Heptachlor epoxide, ug/l	<0.050	<0.050	<0.050	<0.050	<0.050
Methoxychlor, ug/l	<0.50	<0.50	<0.50	<0.50	<0.50
Toxaphene, ug/l	<2.0	<2.0	<2.0	<2.0	<2.0

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SL SAVANNAH LABORATORIES
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57 Executive Park South, Suite 500
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Project: AT002.03 Robbins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46908-6	RAFB-SL9-C-E1	12-04-93
46908-7	RAFB-SL10-C-E1	12-04-93
46908-8	RAFB-SL11-C-E1	12-04-93
46908-9	RAFB-SL12-C-E1	12-04-93
46908-10	RAFB-SL13-C-E1	12-04-93

PARAMETER	46908-6	46908-7	46908-8	46908-9	46908-10
Aroclor-1016, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Aroclor-1221, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Aroclor-1232, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Aroclor-1242, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Aroclor-1248, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Aroclor-1254, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Aroclor-1260, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Surrogate - Dibutylchlorendate % Rec	36 %	56 %	48 %	38 %	84 %
Date Extracted	12.09.93	12.09.93	12.09.93	12.09.93	12.09.93
Date Analyzed	01.05.94	01.05.94	01.05.94	01.05.94	01.05.94

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SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

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LOG NO: S3-46908

Received: 07 DEC 93

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Atlanta, Georgia 30329

Project: AT002.03 Robbins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46908-11	RAFB-TB2	12-04-93

PARAMETER	46908-11
Purgeables (624)	
Benzene, ug/l	<1.0
Bromodichloromethane, ug/l	<1.0
Bromoform, ug/l	<1.0
Bromomethane, ug/l	<1.0
Carbon Tetrachloride, ug/l	<1.0
Chlorobenzene, ug/l	<1.0
Chloroethane, ug/l	<1.0
2-Chloroethylvinyl Ether, ug/l	<10
Chloroform, ug/l	<1.0
Chloromethane, ug/l	<1.0
Dibromochloromethane, ug/l	<1.0
1,2-Dichlorobenzene, ug/l	<1.0
1,3-Dichlorobenzene, ug/l	<1.0
1,4-Dichlorobenzene, ug/l	<1.0
1,1-Dichloroethane, ug/l	<1.0
1,2-Dichloroethane, ug/l	<1.0
1,1-Dichloroethene, ug/l	<1.0
Trans-1,2-Dichloroethene, ug/l	<1.0
Cis-1,2-Dichloroethene, ug/l	<1.0
1,2-Dichloropropane, ug/l	<1.0
Cis-1,3-Dichloropropene, ug/l	<1.0
Trans-1,3-Dichloropropene, ug/l	<1.0
Ethylbenzene, ug/l	<1.0

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LOG NO: S3-46908

Received: 07 DEC 93

Mr. John Schendel
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57 Executive Park South, Suite 500
Atlanta, Georgia 30329

Project: AT002.03 Robbins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
46908-11	RAFB-TB2	12-04-93

PARAMETER	46908-11
Methylene Chloride (Dichloromethane), ug/l	<1.0
1,1,2,2-Tetrachloroethane, ug/l	<1.0
Tetrachloroethene, ug/l	<1.0
Toluene, ug/l	<1.0
1,1,1-Trichloroethane, ug/l	<1.0
1,1,2-Trichloroethane, ug/l	<1.0
Trichloroethylene, ug/l	<1.0
Trichlorofluoromethane, ug/l	<1.0
Vinyl Chloride, ug/l	<1.0
Xylenes, ug/l	<1.0
Acrolein, ug/l	<50
Acrylonitrile, ug/l	<50
Surrogate - Toluene-d8	99 %
Surrogate - 4-Bromofluorobenzene	97 %
Surrogate - 1,2-Dichloroethane-d4	95 %
Date Analyzed	12.18.93

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Project: AT002.03 Robbins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46908-12	Method Blank
46908-13	LCS/LCS Duplicate % Recovery
46908-14	LCS % RPD

PARAMETER	46908-12	46908-13	46908-14
Purgeables (624)			
Benzene, ug/l	<1.0	107/108 %	0.93 %
Bromodichloromethane, ug/l	<1.0	---	---
Bromoform, ug/l	<1.0	---	---
Bromomethane, ug/l	<1.0	---	---
Carbon Tetrachloride, ug/l	<1.0	---	---
Chlorobenzene, ug/l	<1.0	89/98 %	9.6 %
Chloroethane, ug/l	<1.0	---	---
2-Chloroethylvinyl Ether, ug/l	<10	---	---
Chloroform, ug/l	<1.0	---	---
Chloromethane, ug/l	<1.0	---	---
Dibromochloromethane, ug/l	<1.0	---	---
1,2-Dichlorobenzene, ug/l	<1.0	---	---
1,3-Dichlorobenzene, ug/l	<1.0	---	---
1,4-Dichlorobenzene, ug/l	<1.0	---	---
1,1-Dichloroethane, ug/l	<1.0	---	---
1,2-Dichloroethane, ug/l	<1.0	---	---
1,1-Dichloroethene, ug/l	<1.0	76/89 %	16 %
Trans-1,2-Dichloroethene, ug/l	<1.0	---	---
Cis-1,2-Dichloroethene, ug/l	<1.0	---	---
1,2-Dichloropropane, ug/l	<1.0	---	---
Cis-1,3-Dichloropropene, ug/l	<1.0	---	---

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LOG NO: S3-46908

Received: 07 DEC 93

Mr. John Schendel
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Atlanta, Georgia 30329

Project: AT002.03 Robbins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46908-12	Method Blank
46908-13	LCS/LCS Duplicate % Recovery
46908-14	LCS % RPD

PARAMETER	46908-12	46908-13	46908-14
Trans-1,3-Dichloropropene, ug/l	<1.0	---	---
Ethylbenzene, ug/l	<1.0	---	---
Methylene Chloride (Dichloromethane), ug/l	<1.0	---	---
1,1,2,2-Tetrachloroethane, ug/l	<1.0	---	---
Tetrachloroethene, ug/l	<1.0	---	---
Toluene, ug/l	<1.0	95/101 %	6.1 %
1,1,1-Trichloroethane, ug/l	<1.0	---	---
1,1,2-Trichloroethane, ug/l	<1.0	---	---
Trichloroethylene, ug/l	<1.0	95/96 %	1.0 %
Trichlorofluoromethane, ug/l	<1.0	---	---
Vinyl Chloride, ug/l	<1.0	---	---
Xylenes, ug/l	<1.0	---	---
Acrolein, ug/l	<50	---	---
Acrylonitrile, ug/l	<50	---	---
Surrogate - Toluene-d8	100 %	94/101 %	---
Surrogate - 4-Bromofluorobenzene	91 %	98/98 %	---
Surrogate - 1,2-Dichloroethane-d4	95 %	104/105 %	---
Date Analyzed	12.18.93	---	---
Cyanide (335.3)			
Cyanide (335.3), mg/l	<0.010	96/96 %	0 %
Date Analyzed	12.15.93	---	---
pH (150.1)			
pH, units	---	98/98 %	0 %

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LOG NO: S3-46908
Revised 1/12/94
Received: 07 DEC 93

Mr. John Schendel
Engineering Science, Inc.
57 Executive Park South, Suite 500
Atlanta, Georgia 30329

Project: AT002.03 Robbins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46908-12	Method Blank
46908-13	LCS/LCS Duplicate % Recovery
46908-14	LCS % RPD

PARAMETER	46908-12	46908-13	46908-14
Oil & Grease			
Oil & Grease (413.2), mg/l	<1.0	89/87 %	2.3 %
Date Analyzed	12.22.93	---	---
Chemical Oxygen Demand (410.2)			
Chemical Oxygen Demand, mg/l	<20	93/95 %	2.1 %
Date Analyzed	12.08.93	---	---
Fluoride (340.2)			
Fluoride, mg/l	<0.20	110/106 %	3.7 %
Date Analyzed	12.16.93	---	---
Fecal Coliform (MT)			
Fecal Coliform MT, col/100mls	<2.0	---	---
Date Analyzed	12.07.93	---	---
Phenolics, Total Recoverable (420.2)			
Phenolics,Total Recoverable, mg/l	<0.010	90/91 %	1.1 %
Date Analyzed	12.20.93	---	---
Cadmium (200.7)			
Cadmium (200.7), mg/l	<0.0050	90/91 %	1.1 %
Date Analyzed	12.28.93	---	---
Chromium (200.7)			
Chromium (200.7), mg/l	<0.010	96/97 %	1.0 %
Date Analyzed	12.28.93	---	---
Copper (200.7)			
Copper (200.7), mg/l	<0.020	97/98 %	1.0 %
Date Analyzed	12.28.93	---	---

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Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46908-12	Method Blank
46908-13	LCS/LCS Duplicate % Recovery
46908-14	LCS % RPD

PARAMETER	46908-12	46908-13	46908-14
Nickel (200.7)			
Nickel (200.7), mg/l	<0.020	96/97 %	1.0 %
Date Analyzed	12.28.93	---	---
Silver (200.7)			
Silver (200.7), mg/l	<0.010	94/96 %	2.1 %
Date Analyzed	12.28.93	---	---
Zinc (200.7)			
Zinc (200.7), mg/l	<0.020	92/94 %	2.2 %
Date Analyzed	12.28.93	---	---
Lead (239.2)			
Lead (239.2), mg/l	<0.0050	104/106 %	1.9 %
Date Analyzed	12.28.93	---	---
Biochemical Oxygen Demand (5-Day) (405.1)			
Biochemical Oxygen Demand (5 Day), mg/l	<2.0	104/109 %	4.7 %
Date Analyzed	12.07.93	---	---
Suspended Solids (160.2)			
Suspended Solids (160.2), mg/l	<5.0	94/100 %	6.2 %
Date Analyzed	12.08.93	---	---
Total Dissolved Solids (160.1)			
Total Dissolved Solids, mg/l	<5.0	97/106 %	8.9 %
Date Analyzed	12.09.93	---	---
Nitrate + Nitrite-N (353.2)			
Nitrate + Nitrite-N, mg/l	<0.050	99/99 %	0 %
Date Analyzed	12.21.93	---	---

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Project: AT002.03 Robbins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46908-12	Method Blank
46908-13	LCS/LCS Duplicate % Recovery
46908-14	LCS % RPD

PARAMETER	46908-12	46908-13	46908-14
Total Phosphorous (365.4)			
Total Phosphorus (365.4), mg/l	<0.10	97/96 %	1.0 %
Date Analyzed	12.30.93	---	---
Total Kjeldahl Nitrogen (351.2)			
Total Kjeldahl Nitrogen-N, mg/l	<0.10	109/87 %	22 %
Date Analyzed	12.30.93	---	---
Ammonia-N (350.1)			
Ammonia-N, mg/l	<0.030	91/94 %	3.2 %
Date Analyzed	12.22.93	---	---
Nitrogen (Organic) (351.2/350.1)			
Nitrogen(Organic) (351.2/350.1), mg/l	<0.070	---	---
Date Analyzed	12.30.93	---	---

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Project: AT002.03 Robbins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46908-12	Method Blank
46908-13	LCS/LCS Duplicate % Recovery
46908-14	LCS % RPD

PARAMETER	46908-12	46908-13	46908-14
BN-A Extractables (625)			
Acenaphthene, ug/l	<10	71/72 %	1.4 %
Acenaphthylene, ug/l	<10	---	---
Anthracene, ug/l	<10	---	---
Benzo(a)Anthracene, ug/l	<10	---	---
Benzo(b)fluoranthene, ug/l	<10	---	---
Benzo(k)fluoranthene, ug/l	<10	---	---
Benzo(a)pyrene, ug/l	<10	---	---
Benzo(g,h,i)perylene, ug/l	<10	---	---
Benzyl butyl phthalate, ug/l	<10	---	---
bis(2-Chloroethyl)ether, ug/l	<10	---	---
bis(2-Chloroethoxy)methane, ug/l	<10	---	---
bis(2-Ethylhexyl)phthalate, ug/l	<10	---	---
Bis(2-chloroisopropyl)ether, ug/l	<10	---	---
4-Bromophenyl-phenyl-ether, ug/l	<10	---	---
2-Chloronaphthalene, ug/l	<10	---	---
4-Chlorophenyl-phenyl ether, ug/l	<10	---	---
Chrysene, ug/l	<10	---	---
Dibenz(a,h)anthracene, ug/l	<10	---	---
Di-n-butylphthalate, ug/l	<10	---	---
1,3-Dichlorobenzene, ug/l	<10	---	---
1,2-Dichlorobenzene, ug/l	<10	---	---

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Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46908-12	Method Blank
46908-13	LCS/LCS Duplicate % Recovery
46908-14	LCS % RPD

PARAMETER	46908-12	46908-13	46908-14
1,4-Dichlorobenzene, ug/l	<10	67/66 %	1.5 %
3,3'-Dichlorobenzidine, ug/l	<20	---	---
Diethylphthalate, ug/l	<10	---	---
Dimethylphthalate, ug/l	<10	---	---
2,4-Dinitrotoluene, ug/l	<20	74/75 %	1.3 %
2,6-Dinitrotoluene, ug/l	<20	---	---
Di-n-octylphthalate, ug/l	<10	---	---
Fluoranthene, ug/l	<10	---	---
Fluorene, ug/l	<10	---	---
Hexachlorobenzene, ug/l	<10	---	---
Hexachlorobutadiene, ug/l	<10	---	---
Hexachloroethane, ug/l	<2.0	---	---
Indeno(1,2,3-cd)pyrene, ug/l	<10	---	---
Isophorone, ug/l	<10	---	---
Naphthalene, ug/l	<10	---	---
Nitrobenzene, ug/l	<10	---	---
N-Nitrosodi-N-Propylamine, ug/l	<10	87/87 %	0 %
Phenanthrene, ug/l	<10	---	---
Pyrene, ug/l	<10	69/69 %	0 %
1,2,4-Trichlorobenzene, ug/l	<10	72/71 %	1.4 %
4-Chloro-3-methylphenol, ug/l	<10	70/71 %	1.4 %
2-Chlorophenol, ug/l	<10	68/68 %	0 %

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Project: AT002.03 Robbins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46908-12	Method Blank
46908-13	LCS/LCS Duplicate % Recovery
46908-14	LCS % RPD

PARAMETER	46908-12	46908-13	46908-14
2,4-Dichlorophenol, ug/l	<10	---	---
2,4-Dimethylphenol, ug/l	<10	---	---
2,4-Dinitrophenol, ug/l	<50	---	---
2-Methyl-4,6-dinitrophenol, ug/l	<50	---	---
2-Nitrophenol, ug/l	<10	---	---
4-Nitrophenol, ug/l	<50	43/43 %	0 %
Pentachlorophenol, ug/l	<20	53/50 %	5.8 %
Phenol, ug/l	<10	73/72 %	1.4 %
2,4,6-Trichlorophenol, ug/l	<10	---	---
Benzidine, ug/l	<80	---	---
Surrogate-PHL	74 %	75/77 %	---
Surrogate-2FP	61 %	63/63 %	---
Surrogate-TBP	70 %	80/79 %	---
Surrogate-NBZ	70 %	71/75 %	---
Surrogate-2FBP	73 %	73/74 %	---
Surrogate-TPH	84 %	81/82 %	---
Date Extracted	12.10.93	---	---
Date Analyzed	12.16.93	---	---

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57 Executive Park South, Suite 500
Atlanta, Georgia 30329

Project: AT002.03 Robbins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46908-12	Method Blank
46908-13	LCS/LCS Duplicate % Recovery
46908-14	LCS % RPD

PARAMETER	46908-12	46908-13	46908-14
Polynuclear Aromatics (610)			
Acenaphthene, ug/l	<10	68/59 %	14 %
Acenaphthylene, ug/l	<10	---	---
Benzo(a)pyrene, ug/l	<10	44/53 %	19 %
Benzo(g,h,i)perylene, ug/l	<10	---	---
Benzo(b,k)fluoranthene, ug/l	<10	---	---
Chrysene + Benzo(a)anthracene, ug/l	<10	---	---
Fluoranthene, ug/l	<10	---	---
Fluorene, ug/l	<10	69/75 %	8.3 %
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthracene, ug/l	<10	---	---
Naphthalene, ug/l	<10	74/60 %	21 %
Phenanthrene + Anthracene, ug/l	<10	---	---
Pyrene, ug/l	<10	74/87 %	16 %
1-Methylnaphthalene, ug/l	<10	---	---
2-Methylnaphthalene, ug/l	<10	---	---
Surrogate - 2-Fluorobiphenyl	35.3	34.4/28.8	---
Surrogate - Expected Value, mg/l	50	50	---
Surrogate - % Actual Recovery	71 %	69/58 %	---
Surrogate - Control Limit	27-123 %	---	---
Date Extracted	12.09.93	---	---
Date Analyzed	12.16.93	---	---

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Atlanta, Georgia 30329

Project: AT002.03 Robbins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46908-12	Method Blank
46908-13	LCS/LCS Duplicate % Recovery
46908-14	LCS % RPD

PARAMETER	46908-12	46908-13	46908-14
Cl-Pesticides/PCB (608)			
Aldrin, ug/l	<0.050	85/100 %	16 %
alpha-BHC, ug/l	<0.050	---	---
beta-BHC, ug/l	<0.050	---	---
gamma-BHC, ug/l	<0.050	85/100 %	16 %
delta-BHC, ug/l	<0.050	---	---
Chlordane, ug/l	<0.50	---	---
4,4'-DDD, ug/l	<0.10	---	---
4,4'-DDE, ug/l	<0.10	---	---
4,4'-DDT, ug/l	<0.10	114/134 %	16 %
Dieldrin, ug/l	<0.10	100/108 %	7.7 %
Endosulfan I, ug/l	<0.050	---	---
Endosulfan II, ug/l	<0.10	---	---
Endosulfan sulfate, ug/l	<0.10	---	---
Endrin, ug/l	<0.10	104/94 %	10 %
Endrin Aldehyde, ug/l	<0.10	---	---
Heptachlor, ug/l	<0.050	80/95 %	17 %
Heptachlor epoxide, ug/l	<0.050	---	---
Methoxychlor, ug/l	<0.50	---	---
Toxaphene, ug/l	<2.0	---	---
Aroclor-1016, ug/l	<1.0	---	---
Aroclor-1221, ug/l	<1.0	---	---

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46908-12	Method Blank
46908-13	LCS/LCS Duplicate % Recovery
46908-14	LCS % RPD

PARAMETER	46908-12	46908-13	46908-14
Aroclor-1232, ug/l	<1.0	---	---
Aroclor-1242, ug/l	<1.0	---	---
Aroclor-1248, ug/l	<1.0	---	---
Aroclor-1254, ug/l	<1.0	---	---
Aroclor-1260, ug/l	<1.0	---	---
Surrogate - Dibutylchlorendate % Rec	120 %	100/116 %	---
Date Extracted	12.09.93	---	---
Date Analyzed	01.05.94	---	---

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46908-15	MS/MSD % Recovery (RAFB-SL10-G-E1)
46908-16	MS/MSD % RPD

PARAMETER	46908-15	46908-16
Purgeables (624)		
Benzene	141/126 %	11 %
Chlorobenzene	119/108 %	9.7 %
1,1-Dichloroethene	124/110 %	12 %
Toluene	146/134 %	8.6 %
Trichloroethylene	123/109 %	12 %
Surrogate - Toluene-d8	94/95 %	---
Surrogate - 4-Bromofluorobenzene	97/94 %	---
Surrogate - 1,2-Dichloroethane-d4	94/94 %	---
Cyanide (335.3)		
Cyanide (335.3)	81/81 %	0 %
Oil & Grease		
Oil & Grease (413.2)	79/84 %	6.1 %

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46908-17	MS/MSD % Recovery (RAFB-SL10-C-E1)
46908-18	MS/MSD % RPD

PARAMETER	46908-17	46908-18
Chemical Oxygen Demand (410.2)		
Chemical Oxygen Demand	---	---
Fluoride (340.2)		
Fluoride	113/117 %	3.5 %
Fecal Coliform (MT)		
Fecal Coliform MT	---	---
Phenolics, Total Recoverable (420.2)		
Phenolics,Total Recoverable	94/100 %	6.2 %
Cadmium (200.7)		
Cadmium (200.7)	87/87 %	0 %
Chromium (200.7)		
Chromium (200.7)	97/99 %	2.0 %
Copper (200.7)		
Copper (200.7)	97/98 %	1.0 %
Nickel (200.7)		
Nickel (200.7)	96/96 %	0 %
Silver (200.7)		
Silver (200.7)	97/99 %	2.0 %
Zinc (200.7)		
Zinc (200.7)	90/90 %	0 %
Lead (239.2)		
Lead (239.2)	106/105 %	0.94 %
Nitrate + Nitrite-N (353.2)		
Nitrate + Nitrite-N	76/79 %	3.9 %

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46908-17	MS/MSD % Recovery (RAFB-SL10-C-E1)
46908-18	MS/MSD % RPD

PARAMETER	46908-17	46908-18
Total Phosphorous (365.4)		
Total Phosphorus (365.4)	65/32 %	68 %
Total Kjeldahl Nitrogen (351.2)		
Total Kjeldahl Nitrogen-N	73/98 %	29 %
Ammonia-N (350.1)		
Ammonia-N	48/52 %	8.0 %
Nitrogen (Organic) (351.2/350.1)		
Nitrogen(Organic) (351.2/350.1)	---	---

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46908-17	MS/MSD % Recovery (RAFB-SL10-C-E1)
46908-18	MS/MSD % RPD

PARAMETER	46908-17	46908-18
BN-A Extractables (625)		
Acenaphthene	71/70 %	1.4 %
1,4-Dichlorobenzene	66/67 %	1.5 %
2,4-Dinitrotoluene	75/74 %	1.3 %
N-Nitrosodi-N-Propylamine	81/85 %	4.8 %
Pyrene	70/70 %	0 %
1,2,4-Trichlorobenzene	70/72 %	2.8 %
4-Chloro-3-methylphenol	70/72 %	2.8 %
2-Chlorophenol	66/66 %	0 %
4-Nitrophenol	47/46 %	2.2 %
Pentachlorophenol	60/59 %	1.7 %
Phenol	70/71 %	1.4 %
Surrogate-PHL	74/74 %	---
Surrogate-2FP	61/62 %	---
Surrogate-TBP	75/79 %	---
Surrogate-NBZ	71/73 %	---
Surrogate-2FBP	74/72 %	---
Surrogate-TPH	73/72 %	---
Polynuclear Aromatics (610)		
Acenaphthene	60/63 %	4.9 %
Benzo(a)pyrene	38/26 %	38 %
Fluorene	63/65 %	3.1 %
Naphthalene	64/69 %	7.5 %
Pyrene	86/67 %	25 %

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Project: AT002.03 Robbins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46908-17	MS/MSD % Recovery (RAFB-SL10-C-E1)
46908-18	MS/MSD % RPD

PARAMETER	46908-17	46908-18
Cl-Pesticides/PCB (608)		
Aldrin	80/90 %	12 %
gamma-BHC	85/90 %	5.7 %
4,4'-DDT	102/106 %	3.8 %
Dieldrin	100/118 %	16 %
Endrin	92/120 %	26 %
Heptachlor	80/85 %	6.1 %

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— by J. Schendel

SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S3-46908
Rev-3 1/24/94
Received: 07 DEC 93

Mr. John Schendel
Engineering Science, Inc.
57 Executive Park South, Suite 500
Atlanta, Georgia 30329

Project: AT002.03 Robbins AFB
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
46908-19	Method Blank
46908-20	LCS/LCS Duplicate % Recovery
46908-21	LCS % RPD

PARAMETER	46908-19	46908-20	46908-21
Phenolics, Total Recoverable			
Phenolics,Total Recoverable, mg/l	<0.010	104/112 %	7.4 %
Date Analyzed	12.31.93	---	---

Methods: EPA SW-846 and 40 CFR Part 136.
Total Recoverable Phenolics analyzed by
Method 420.2.

Linda A. Wolfe

Linda A. Wolfe

RECD JAN 24 1994
to J. Schendel

Final Page Of Report

TEMPERATURE RECORD

Project Reference:	SL Log No.:	Date Received:
Robbins AFB	S3 46908	12-7-93

Chain of Custody Number	Cooler Temperature
1320	2.8
1318	0.9
1317	FWT 0.0
1226	1.0
1319	FWT 0.1
1225	0.7
1316	4.7

RECD JAN 11 1994

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

FCU\CU12:11.03.93:0

ENGINEERING-SCIENCE 1316
CHAIN OF CUSTODY RECORD

ES JOB NUMBER: AA 002.03

PROJECT NAME\LOCATION: RoBBins AFB

SAMPLER(S): (Signature) E [signature] for Jeffrey Albert / Alen Ballinger

SHIP TO: Sahvawah LaB GA

			PRESERVATIVE REQUIRED	4C	H_2SO_4	NaOH	H_2SO_4	4C	4C	HNO_3	Sod Thio	H_2SO_4			
			ANALYSES REQUIRED	150.1/310.2	413.2/418.1	335.3	420.1	608/610/625	160.1,2/405.1	200.7/239.2	SM5210.6	353.3 351.2/353.2 365.4			
Date	**Time**	**Sample Description**	**Number of Containers**										**Sample Type**	**Matrix**	**Remarks**
12-4-93	2115 to 2215	RAFB-SL10-C-E1	22	X	X	X	X	X	X	X	X	X	~~G~~ (C) EAB	H2O	ms/msD
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EAB

RECD JAN 11 1994

Relinquished by: (Signature)	Date/Time		Received for Laboratory by:	Date/Time		Remarks
E [signature]	12-6-93	1800	J Baker LAB 468908	12/7/93	10:08	Remarks: 12/8 per J. Schandel bottles for O+G, CN+TPH should be labeled RAFB-SL10-G-E1 BH. Airbill#: 8446985245

Distribution: Original, yellow and pink sheets sent to lab. Gold retained by field personnel. Lab retains original and sends yellow and pink copies with analytical report.

G - Grab
C - Composite

ENGINEERING-SCIENCE
CHAIN OF CUSTODY RECORD

ES JOB NUMBER	PROJECT NAME\LOCATION	SHIP TO:
AA002-03	ROBBINS AFB	Savannah LaB GA

SAMPLER(S): (Signature) E [signature] for Jeffrey Albert / Alan Bollinger

PRESERVATIVE REQUIRED / ANALYSES REQUIRED

Date	Time	Sample Description	Number of Containers	4C 150.1/310.2	H2SO4 413.2/418.1	NaOH 335.3	H2SO4 420.1	4C 6010/7000	4C 160.1/2	HNO3 200.7/239.2	$Na_2S_2O_3$ SM5221	H2SO4 353.2/351.2/365.4	Sample Type	Matrix	Remarks
12-4-93	2115 TO 2215	RAFB-SL10-C-E1	15	X	X	X	X	X	X	X	X	X	G C	H2O	
													G C		
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EAB

Relinquished by: (Signature)	Date/Time		Received for Laboratory by:	Date/Time		Remarks:
E [signature]	12-6 93	1400	L Baker 46908	12/7/93	10:08	12/8 per J Solendal bottles for CN, 6010-TM should read: RAFB-SL10-G-E1 Bat
						Airbill#: 8446985245

RECD JAN 11 1994

Distribution: Original, yellow and pink sheets sent to lab. Gold retained by field personnel.
Lab retains original and sends yellow and pink copies with analytical report.

G - Grab
C - Composite

1318

ENGINEERING-SCIENCE
CHAIN OF CUSTODY RECORD

ES JOB NUMBER	PROJECT NAME\LOCATION	SHIP TO:
AA002-03	ROBBins AFB	Savannah Lab GA

SAMPLER(S): (Signature) E [signature] for Jeffrey Albert / Alan Ballinger

PRESERVATIVE REQUIRED: 4C | H_2SO_4 | NaOH | H_2SO_4 | 4C | 4C | HNO_3 | ZnAc NaOH | H_2SO_4

Date	Time	Sample Description	Number of Containers	150.1/340.2	413.2/418.1	335.3	420.1	608/625	160.1.2/405.1	200.7/239.2	Sm9221-6	350.3 351.2 353.2 365.4	Sample Type	Matrix	Remarks
12-4-93	2055 TO 2140	RAFB-SL11-C-E1	15	X	X	X	X	X	X	X	X	X	G (C)	H2O	
													G C		
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EAB 12/4/93

RECD JAN 11 1994

Relinquished by: (Signature)	Date/Time		Received for Laboratory by:	Date/Time		Remarks:
E [signature]	12-6 93	1800	L Baker 46908	12/7/93	10:08	10/8 per J Schenkel bottles for CN, O&G & pH should read: RAFB-SL11-G-E1 pH
						Airbill#: 8446985245

Distribution: Original, yellow and pink sheets sent to lab. Gold retained by field personnel.
Lab retains original and sends yellow and pink copies with analytical report.

G - Grab
C - Composite

ENGINEERING-SCIENCE
CHAIN OF CUSTODY RECORD

ES JOB NUMBER	PROJECT NAME\LOCATION	SHIP TO:
AA002.03	Robbins AFB	Savannah Lab GA

SAMPLER(S): (Signature) E-J for Jeffry Albert / Alan Ballinger

Date	Time	Sample Description	Number of Containers	150.1/340.2 (4c)	413.2/410.1 (H_2SO_4)	335.3 (NaOH)	420.1 (H_2SO_4)	602/610/625 (4c)	160.1.2/405.1 (4c)	200.7/239.2 (HNO_3)	Sm 9221.6 (Sod Thio)	350.3/351.3/353.2 (H_2SO_4)	Sample Type	Matrix	Remarks
12-4-93	2040 TO 2205	RAFB-SL12-C-E1	15	X	X	X	X	X	X	X	X	X	G C	H2O	
													G C		
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Gro

Relinquished by: (Signature)	Date/Time		Received for Laboratory by:	Date/Time		Remarks:
E-J	12-6 93	1800	L. Baker 46908	12/7/93	10:58	Airbill#: 8446985245

Distribution: Original, yellow and pink sheets sent to lab. Gold retained by field personnel. Lab retains original and sends yellow and pink copies with analytical report.

G - Grab
C - Composite

RECD JAN 11 1994

ENGINEERING-SCIENCE
CHAIN OF CUSTODY RECORD

ES JOB NUMBER: AA002.03

PROJECT NAME\LOCATION: RoBBins AFB

SAMPLER(S): (Signature) [signature] FOR JEFFREY ALBERT / Alan Bollinger

SHIP TO: Savannah Lab GA

Date	Time	Sample Description	Number of Containers	160.1/340.2 (4C)	413.2/410.1 (H_2SO_4)	335.3 (NaOH)	420.1 (H_2SO_4)	405/600/625 (4C)	418.1/424.1 (4C)	200.7/239.2 (HNO_3)	SM 9221-6 (Thio)	353.2/365.4 (H_2SO_4)	Sample Type	Matrix	Remarks
12-4-93	2045 TO 2200	RAFB-SL13-C-E1	15	X	X	X	X	X	X	X	X	X	G C (circled)	H20	
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RECD JAN 11 1994

Relinquished by: (Signature)	Date/Time		Received for Laboratory by:	Date/Time		Remarks:
[signature]	12-6-93	1800	L Baker 46908	12/7/93	10:18	12/8 per 2 scheduled bottles for oil, grey PH should read: AAFB-SL13-G-E1 [initials]

Airbill#: 8446485245

Distribution: Original, yellow and pink sheets sent to lab. Gold retained by field personnel.
Lab retains original and sends yellow and pink copies with analytical report.

G - Grab
C - Composite

ENGINEERING-SCIENCE
CHAIN OF CUSTODY RECORD

ES JOB NUMBER	PROJECT NAME\LOCATION	SHIP TO:
AA 002.03	ROBBINS AFB	Sahvannah Lab GA.

SAMPLER(S): (Signature) [signature] FOR JEFFREY ALBERT / Alan Bollinger

PRESERVATIVE REQUIRED / ANALYSES REQUIRED

Date	Time	Sample Description	Number of Containers	4C: 150.1/310.2	H_2SO_4: 413.2/410.1	NaOH: 335.3	H_2SO_4: 420.1	4C: 601/610/[illegible]	4C: 160.1, 160.2/405.1	HNO_3: 200.7/239.2	Sod Thio: SM 9221-6	H_2SO_4: [illegible] 351.2 [illegible] 365.4	Sample Type	Matrix	Remarks
12-4-93	2050 TO 2210	RAFB-SL9-~~G~~-E1	15	X	X	X	X	X	X	X	X	X	G C	H_2O	
													G C		
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RECD JAN 11 1994

Relinquished by: (Signature)	Date/Time		Received for Laboratory by:	Date/Time		Remarks:
[signature]	12-6-93	1800	L Baker 46908	12/7/93	10:08	Airbill#: 8446985245

Distribution: Original, yellow and pink sheets sent to lab. Gold retained by field personnel.
Lab retains original and sends yellow and pink copies with analytical report.

G - Grab
C - Composite

ENGINEERING-SCIENCE

CHAIN OF CUSTODY RECORD

1226

ES JOB NUMBER	PROJECT NAME\LOCATION	PRESERVATIVE REQUIRED	SHIP TO:
AA002.03	RoBBins AFB	HCL	Savannah Lab GA

SAMPLER(S): (Signature) E T for Jeffrey Albert / Alan Bollinger

ANALYSES REQUIRED: 624 601 602

Date	Time	Sample Description	Number of Containers	624 601 602									Sample Type	Matrix	Remarks
12-4-93	2045	RAFB-SL9-G-E1	6	X									G C	H2O	
12-4-93	2055	RAFB-SL10-G-E1	18	X									G C	H2O	
12-4-93	2045	RAFB-SL11-G-E1	6	X									G C	H2O	
12-4-93	2030	RAFB-SL12-G-E1	6	X									G C	H2O	
12-4-93	2035	RAFB-SL13-G-E1	6	X									G C	H2O	
12-4-93		RAFB-TB2	6	X									G C	H2O	
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RECD JAN 11 1994

Relinquished by: (Signature)	Date/Time		Received for Laboratory by:	Date/Time		Remarks:
E T	12-6 93	1800	L Baker 46908	12/7/93	10:08	Airbill#: 8446985245

Distribution: Original, yellow and pink sheets sent to lab. Gold retained by field personnel. Lab retains original and sends yellow and pink copies with analytical report.

G - Grab
C - Composite

RECD JAN 11 1994

ATTACHMENT B
DATA VALIDATION REPORTS FOR THE ANALYTICAL DATA RESULTING FROM THE NOVEMBER-DECEMBER 1993 STORM WATER SAMPLING EFFORT
ROBINS AFB, GEORGIA

DATA VALIDATION REPORTS FOR THE ANALYTICAL DATA RESULTING FROM THE NOVEMBER 5, 1993 RAIN EVENT

DATA VALIDATION OF

VOLATILE ORGANIC COMPOUNDS BY EPA 624

This report contains the validation of the following samples.

Sample ID	Type	Matrix
RAFB-SL1-G-E1	Grab	Water
RAFB-SL2-G-E1	Grab	Water
RAFB-SL3-G-E1	Grab	Water
RAFB-SL4-G-E1	Grab	Water
RAFB-SL5-G-E1	Grab	Water
RAFB-SL6-G-E1	Grab	Water
RAFB-SL7-G-E1	Grab	Water
RAFB-SL8-G-E1	Grab	Water
RAFB-SL16-G-E1	Grab	Water
RAFB-TB1-G-E1	Grab	Water

I. HOLDING TIMES

All samples were analyzed within the required 14 days of sampling.

2. BLANKS

There were two method blanks and one trip blank in association with these samples. All blanks were found to be free of all analyte contamination except:

Blank	Analyte	Conc.	Affected Samples
RAFB-TB1-G-E1	methylene chloride	1.0	RAFB-SL16-G-E1
	1,1,1-trichloroethane	4.0	None
	xylenes	3.1	None

Data validation criteria for method blanks and trip blanks are that all associated sample results with concentrations less than 10X the common lab contaminants (acetone, 2-butanone and methylene chloride) and less than 5X all other analytes found in the blanks were flagged "U" and are considered to be non-detect at the value given. The positive value of 1.0 $\mu g/L$ for methyene chlorinde in sample RAFB-SL16-G-E1 was flagged as "U" at the value given due to the presence of the analyte in the trip balnk RAFB-TB1-G-E1. No other qualification was required as all results for these compounds were either reported as non-detect or were >10X the blank value.

3. SPIKE/ SPIKE DUPLICATE (MS/MSD AND BS/BSD)

Sample RAFB-SL6-G-E1 was analyzed as the MS/MSD.

All %R and RPDs were compliant except:

Analyte	S %R	SD %R	QC Limit %R	RPD	QC Limit RPD
benzene	150	141	76-127	-	11
chlorobenzene	23	43	75-130	61	13
toluene	248	320	76-125	25	13
1,1-dichloroethene	-	-	61-145	-	14
trichloroethene	-	-	71-120	-	14

No flags were assigned based on these results as other QC criteria (surrogates) were within acceptance limits.

All BS(LCS) percent recoveries were within QC limits.

4. SURROGATE

There were three surrogates added to each sample. All surrogate %R were within the QC limits listed below:

Surrogate	%R QC Limit
1,2-dichloroethane-d4	76-114
toluene-d8	88-110
bromofluorobenzene	86-115

5. FIELD DUPLICATES

Sample RAFB-SL16-G-E1 was a coded field duplicate of sample RAFB-SL6-G-E1. The RPD QC limits for field duplicates are <20%. If the sample and/or the duplicate results are less than 5X the RL, the QC limit is ± 2X the RL. The following lists the non-compliant results of the coded duplicates.

Analyte	Result Sample	Result Duplicate	RPD	QC Limit
benzene	1.5	4.8	> 2X RL	2.0
chlorobenzene	8.7	ND	> 2X RL	2.0
ethylbenzene	ND	6.3	> 2X RL	2.0
toluene	1.2	19	> 2X RL	2.0

All positive results for these compounds in all samples were qualified as estimated "J".

6. PROJECT REPORTING LIMITS

All reporting limits were at or below the Georgia EPD NPDES required detection limits.

7. OVERALL ASSESSMENT OF DATA FOR THE CASE

The data quality objectives for measurement data include considerations for precision, accuracy, completeness, representativeness and comparability. The data package as presented by Savannah Laboratories is 100% complete and all data are valid as qualified.

DATA VALIDATION OF

SEMIVOLATILE ORGANIC COMPOUNDS (BNA) BY EPA 625

This report contains the validation of following samples.

Sample ID	Type	Matrix
RAFB-SL1-C-E1	Composite	Water
RAFB-SL2-C-E1	Composite	Water
RAFB-SL3-C-E1	Composite	Water
RAFB-SL4-C-E1	Composite	Water
RAFB-SL5-C-E1	Composite	Water
RAFB-SL6-C-E1	Composite	Water
RAFB-SL7-C-E1	Composite	Water
RAFB-SL8-C-E1	Composite	Water
RAFB-SL16-C-E1	Composite	Water

1. HOLDING TIMES

All samples were extracted within the required seven days of sample collection and analyzed within forty days of extraction.

2. BLANKS

There was one method blank in association with these samples. The blank was found to be free of all analyte contamination.

Data validation criteria for method blanks are that all associated sample results with concentrations less than 10X the common lab contaminants (phthalates) and less than 5X all other analytes found in the blanks were flagged "U" and are considered to be non-detect at the value given.

3. SPIKE/SPIKE DUPLICATE (MS/MSD AND BS/BSD)

Sample RAFB-SL6-C-E1 was analyzed as the MS/MSD.

All %R and RPDs were compliant except:

Analyte	S %R	SD %R	QC Limit %R	RPD	QC Limit RPD
2,4-dinitrotoluene	120	119	24-96	-	38
1,2,3-trichlorobenzene	-	-	39-98	-	28
acenaphthene	-	-	46-118	-	31
pyrene	-	-	26-127	-	31
N-nitroso-di-n-propylamine	-	-	41-116	-	38
1,4-dichlorobenzene	-	-	36-97	-	28
pentachlorophenol	-	-	9-103	-	50
phenol	-	-	12-110	-	42
2-chlorophenol	-	-	27-123	-	40
4-chloro-3-methylphenol	-	-	23-97	-	42
4-nitrophenol	-	-	10-80	-	50

No action was taken based on these results as other QC criteria (surrogates) were met.

4. SURROGATE

There were six base/neutral extractable surrogates added to each sample prior to extraction. All surrogate %R were within the QC limits listed below:

Surrogate	%R QC Limit
nitrobenzene-d5	35-114
terphenyl-d14	33-141
1-fluorobiphenyl	43-116
2-fluorophenol	21-110
2,4,6-tribromophenol	10-123
phenol-d5	10-110

5. FIELD DUPLICATES

Sample RAFB-SL16-C-E1 was a coded duplicate of sample RAFB-SL6-C-E1. The RPD QC limits for field duplicates are <20%. If the sample and/or the duplicate results are less than 5X the RL, the QC limit is ± 2X the RL. All results in both samples were reported as non-detect, therefore, the field precision was acceptable.

6. PROJECT REPORTING LIMITS

All project reporting limits were at or below the Georgia EPD NPDES required detection limits.

7. OVERALL ASSESSMENT OF DATA FOR THE CASE

The data quality objectives for measurement data include considerations for precision, accuracy, completeness, representativeness, and comparability. The data package as presented by Savannah Laboratories is 100% complete and all data are valid as qualified.

DATA VALIDATION OF

POLYNUCLEAR AROMATIC HYDROCARBONS (PAH) BY EPA 610

This report contains the validation of following samples.

Sample ID	Type	Matrix
RAFB-SL1-C-E1	Composite	Water
RAFB-SL2-C-E1	Composite	Water
RAFB-SL3-C-E1	Composite	Water
RAFB-SL4-C-E1	Composite	Water
RAFB-SL5-C-E1	Composite	Water
RAFB-SL6-C-E1	Composite	Water
RAFB-SL7-C-E1	Composite	Water
RAFB-SL8-C-E1	Composite	Water
RAFB-SL16-C-E1	Composite	Water

1. HOLDING TIMES

All samples were extracted within the required seven days of sample collection and analyzed within forty days of extraction.

2. BLANKS

There was one method blank in association with these samples. The blank was found to be free of all analyte contamination.

Data validation criteria for method blanks are that all associated sample results with concentrations less than 10X the common lab contaminants (all phthalates) and less than 5X all other analytes found in the blanks were flagged "U" and are considered to be non-detect at the value given.

3. SPIKE/SPIKE DUPLICATE (MS/MSD AND BS/BSD)

Sample RAFB-SL6-C-E1 was analyzed as the MS/MSD.

All %R and RPDs were within the QC limits as listed below:

Analyte	S %R	SD %R	QC Limit %R	RPD	QC Limit RPD
acenaphthene	-	-	44-162	-	52
chrysene	-	-	10-199	-	40
fluorene	-	-	10-142	-	40
naphthalene	-	-	50-135	-	40
pyrene	-	-	50-158	-	43

4. SURROGATE RECOVERY

There was one surrogate added to each sample. All surrogate %R were acceptable (QC limits 28-106%).

5. FIELD DUPLICATES

Sample RAFB-SL16-C-E1 was a coded duplicate of sample RAFB-SL6-C-E1. The RPD QC limits for field duplicates are <20%. If the sample and/or the duplicate results are less than 5X the RL, the QC limit is ± 2X the RL. All results in both samples were reported as non-detect, therefore,the field precision was acceptable.

6. PROJECT REPORTING LIMITS

All project reporting limits were below the Georgia EPD NPDES required detection limits. However, there were three sets of compounds which co-eluted:

a. chrysene and benzo(a)anthracene

b. indeno(1,2,3-cd)pyrene and dibenzo(a,h)anthracene

c. phenanthrene and anthracene

No action was required based on this as all results for these compounds were reported as non-detect.

7. OVERALL ASSESSMENT OF DATA FOR THE CASE

The data quality objectives for measurement data include considerations for precision, accuracy, completeness, representativeness, and comparability. The data package as presented by Savannah Laboratories is 100% complete and all data are valid within listed qualifiers.

DATA VALIDATION OF

PESTICIDES AND POLYCHLORINATED BIPHENYLS BY EPA 608

This report contains the validation of samples.

Sample ID	Type	Matrix
RAFB-SL1-C-E1	Composite	Water
RAFB-SL2-C-E1	Composite	Water
RAFB-SL3-C-E1	Composite	Water
RAFB-SL4-C-E1	Composite	Water
RAFB-SL5-C-E1	Composite	Water
RAFB-SL6-C-E1	Composite	Water
RAFB-SL7-C-E1	Composite	Water
RAFB-SL8-C-E1	Composite	Water
RAFB-SL16-C-E1	Composite	Water

1. HOLDING TIMES

The samples were extracted within 7 days of sampling and analyzed within 40 days of extraction.

2. BLANKS

There was one method blank in association with these samples. The blank was found to be free of all analyte contamination.

Data validation criteria for method blanks are that all associated sample results with concentrations less than 5X all other analytes found in the blanks weré flagged "U" and are considered to be non-detect at the value given.

3. SURROGATE RECOVERY

One surrogate, dibutylchlorendate (DBC) was spiked into each sample to monitor the extraction and analysis procedures. All surrogate percent recoveries (%R) were within the QC Limits except:

Sample	Surrogate	%R	QC Limit	Qualifier
RAFB-SL3-C-E1	DCB	7.0	50-150%	"R"
RAFB-SL4-C-E1	DCB	4.0	50-150%	"R"

The analytes in the above samples are considered to be unusable ("R").

4. **MATRIX SPIKE/MATRIX SPIKE DUPLICATE(MS/MSD)TS**

MS/MSD was performed on sample RAFB-S16-C-E1.

All %R and RPDs were within QC limits listed below:

Analyte	S %R	SD %R	QC Limit %R	RPD	QC Limit RPD
gamma-BHC	-	-	52-136	-	18
heptachlor	-	-	42-139	-	22
aldrin	-	-	42-116	-	25
dieldrin	-	-	51-143	-	46
endrin	-	-	57-142	-	23
4,4'-DDT	-	-	67-137	-	28

All BS(LCS) %R and RPDs were within QC limits.

5. **FIELD DUPLICATES**

Sample RAFB-SL16-C-E1 was a coded field duplicate of sample RAFB-SL6-C-E1. The RPD QC limits for field duplicates are <20%. If the sample and/or the duplicate results are less than 5X the RL, the QC limit is ± 2X the RL. All results in both samples were reported as non-detect, therefore, the field precision was acceptable.

6. **PROJECT REPORTING LIMITS**

All project reporting limits were at or below the Georgia EPD NPDES required detection limits.

7. **OVERALL ASSESSMENT OF DATA FOR THE CASE**

The data quality objectives for measurement data include considerations for precision, accuracy, completeness, representativeness, and comparability. The data package as presented by Savannah Laboratories is 77.8% complete due to non-compliant surrogate recoveries. All usable data are valid as qualified.

DATA VALIDATION OF

TRACE METALS BY ICP AND GFAA

This report contains the validation of the following samples.

Sample ID	Type	Matrix
RAFB-SL1-C-E1	Composite	Water
RAFB-SL2-C-E1	Composite	Water
RAFB-SL3-C-E1	Composite	Water
RAFB-SL4-C-E1	Composite	Water
RAFB-SL5-C-E1	Composite	Water
RAFB-SL6-C-E1	Composite	Water
RAFB-SL7-C-E1	Composite	Water
RAFB-SL8-C-E1	Composite	Water
RAFB-SL16-C-E1	Composite	Water

1. HOLDING TIMES

All samples were extracted and analyzed within the required time of sampling. The metals limit was six months from sampling.

2. BLANKS

There was one preparation blank analyzed in association with these samples. The blank was found to be free of analyte contamination.

All associated sample results with concentrations less than 5X found in the preparation and calibration blanks are flagged "U" and are considered to be non-detect at the value given.

3. MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

Sample RAFB-SL6-C-E1 was analyzed as the MS/MSD. All %R and RPDs were compliant (QC limits 75-125% and 20% respectively).

All BS/BSD %R and RPD values were within the QC limits.

4. FIELD DUPLICATES

Samples RAFB-SL16-C-E1 was a coded field duplicate of sample RAFB-SL6-C-E1. The RPD QC limits for field duplicates are <20% If the sample and/or the duplicate results are less than 5X the RL, the QC limit is ± 2X the RL. The following lists the results of the coded duplicates.

	Results			
Analyte	Sample	Duplicate	%RPD	QC Limit
zinc	0.035	0.038	8.2	20%

All other results were reported as non-detect. Therefore, the field precision was acceptable.

5. PROJECT REPORTING LIMITS

All project reporting limits were at or below the Georgia EPD NPDES required detection limits.

6. OVERALL ASSESSMENT OF DATA FOR THE CASE

The data quality objectives for measurement data include considerations for precision, accuracy, completeness, representativeness, and comparability. The data package as presented by Savannah Laboratories is 100% complete and all usable data are valid as qualified.

DATA VALIDATION OF

CONVENTIONAL COMPOUNDS

This report contains the validation of the following samples.

Sample ID	Type	Matrix
RAFB-SL1-G-E1	Grab	Water
RAFB-SL2-G-E1	Grab	Water
RAFB-SL3-G-E1	Grab	Water
RAFB-SL4-G-E1	Grab	Water
RAFB-SL5-G-E1	Grab	Water
RAFB-SL6-G-E1	Grab	Water
RAFB-SL7-G-E1	Grab	Water
RAFB-SL8-G-E1	Grab	Water
RAFB-SL16-G-E1	Grab	Water

The listed samples were analyzed for cyanide (EPA Method 335.3), pH (EPA Method 150.1) and oil & grease (EPA Method 413.2).

I. HOLDING TIMES

All samples were analyzed within the required times of sampling (cyanide 14 days, oil & grease 28 days and pH 24 hours) except pH. All pH samples were analyzed 46-72 hours beyond sampling and all results were qualified "J" as estimated.

2. BLANKS

There was one method blank for each analysis in association with these samples. All blanks were found to be free of all analyte contamination.

Data validation criteria for method blanks are that all associated sample results with concentrations less than 10X the common lab contaminants (acetone, 2-butanone and methylene chloride) and less than 5X all other analytes found in the blanks were flagged "U" and are considered to be non-detect at the value given. No qualification was required as all results for these compounds were either reported as non-detect or were >10X the blank value.

3. SPIKE/ SPIKE DUPLICATE (MS/MSD AND BS/BSD)

Sample RAFB-SL6-G-E1 was analyzed as the MS/MSD for cyanide and oil & grease.

All %R and RPDs were compliant (QC limits 75-125% and 20% respectively).

All BS(LCS) percent recoveries were within QC limits for all analyses.

4. SURROGATE

There were no surrogates required for these analyses.

5. FIELD DUPLICATES

Sample RAFB-SL16-G-E1 was a coded field duplicate of sample RAFB-SL6-G-E1. The RPD QC limits for field duplicates are <20%. If the sample and/or the duplicate

results are less than 5X the RL, the QC limit is ± 2X the RL. All RPDs were within the QC limits, therefore, the field precision was acceptable.

6. PROJECT REPORTING LIMITS

All reporting limits were acceptable.

7. OVERALL ASSESSMENT OF DATA FOR THE CASE

The data quality objectives for measurement data include considerations for precision, accuracy, completeness, representativeness and comparability. The data package as presented by Savannah Laboratories is 100% complete and all data are valid as qualified.

DATA VALIDATION OF

CONVENTIONAL COMPOUNDS

This report contains the validation of the following samples.

Sample ID	Type	Matrix
RAFB-SL1-C-E1	Composite	Water
RAFB-SL2-C-E1	Composite	Water
RAFB-SL3-C-E1	Composite	Water
RAFB-SL4-C-E1	Composite	Water
RAFB-SL5-C-E1	Composite	Water
RAFB-SL6-C-E1	Composite	Water
RAFB-SL7-C-E1	Composite	Water
RAFB-SL8-C-E1	Composite	Water
RAFB-SL16-C-E1	Composite	Water

The listed samples were analyzed for chemical oxygen demand (EPA 410.2), fluoride (EPA 340.2), residual chlorine (Standard Method 408A), biochemical oxygen demand (EPA 405.1), total suspended solids (EPA 160.2), total dissolved solids (EPA 160.1), fecal coliform (Standard Method 9222-D), total recoverable phenolics (EPA 420.2), total kjeldahl nitrogen (EPA 351.2), ammonia-nitrogen (EPA 350.1), nitrate + nitrite-nitrogen (EPA 353.2), organic nitrogen (EPA 351.2/350.1) and total phosphorus (EPA 365.4).

I. HOLDING TIMES

The holding times for the methods are listed below:

Analyte	Method	Holding Time
COD	EPA 410.2	28 days
fluoride	EPA 340.2	28 days
res. chlorine	SM408A	24 hours
BOD	EPA 405.1	48 hours
TSS	EPA 160.2	7 days
TDS	EPA 160.1	7 days
fecal coliform	SM9222-D	30 hours
phenolics	EPA 420.2	28 days
kjeldahl nitrogen	EPA 351.2	28 days
ammonia nitrogen	EPA 350.1	28 days
NO_3/NO_2-nitrogen	EPA 353.2	28 days
organic nitrogen	EPA 351.2/350.1	28 days
phosphorus	EPA 365.4	28 days

All samples were analyzed within required holding times except residual chlorine (analyzed ≈92-120 hours beyond sampling) and fecal coliform (analyzed ≈68-96 hours beyond sampling). All results for both of these analyses were qualified "J" or "UJ" as estimated.

2. BLANKS

There was one method blank in association with these samples. The blank was found to be free of all analyte contamination.

Data validation criteria for method blanks are that all associated sample results with concentrations less than 10X the common lab contaminants (phthalates) and less than 5X all other analytes found in the blanks were flagged "U" and are considered to be non-detect at the value given.

3. SPIKE/SPIKE DUPLICATE (MS/MSD AND BS/BSD)

Sample RAFB-SL6-C-E1 was analyzed as the MS/MSD.

All %R and RPDs were compliant except:

Analyte	S %R	SD %R	QC Limit %R	RPD	QC Limit RPD
NO_3/NO_2-nitrogen	62	67	75-125	-	20%
ammonia-nitrogen	71	74	75-125	-	20%

All ammonia-nitrogen and NO_3/NO_2-nitrogen results were qualified "J" or "UJ" as estimated.

4. SURROGATE

There were no surrogates required for these analyses.

5. FIELD DUPLICATES

Sample RAFB-SL16-C-E1 was a coded duplicate of sample RAFB-SL6-C-E1. The RPD QC limits for field duplicates are <20%. If the sample and/or the duplicate results are less than 5X the RL, the QC limit is ± 2X the RL. All RPDs were within QC limits, therefore, the field precision was acceptable.

6. PROJECT REPORTING LIMITS

All project reporting limits were acceptable.

7. OVERALL ASSESSMENT OF DATA FOR THE CASE

The data quality objectives for measurement data include considerations for precision, accuracy, completeness, representativeness, and comparability. The data package as presented by Savannah Laboratories is 100% complete and all data are valid as qualified.

DATA VALIDATION REPORTS FOR THE ANALYTICAL DATA RESULTING FROM THE DECEMBER 4, 1993 RAIN EVENT

DATA VALIDATION OF

VOLATILE ORGANIC COMPOUNDS BY EPA 624

This report contains the validation of the following samples:

Sample ID	Type	Matrix
RAFB-SL9-G-E1	Grab	Water
RAFB-SL10-G-E1	Grab	Water
RAFB-SL11-G-E1	Grab	Water
RAFB-SL12-G-E1	Grab	Water
RAFB-SL13-G-E1	Grab	Water
RAFB-TB2	Grab	Water

I. HOLDING TIMES

All samples were analyzed within the required 14 days of sampling.

2. BLANKS

There was one method blank and one trip blank in association with these samples. All blanks were found to be free of analyte contamination.

Data validation criteria for method blanks and trip blanks are that all associated sample results with concentrations less than 10X the common lab contaminants (acetone, 2-butanone and methylene chloride) and less than 5X all other analytes found in the blanks were flagged "U" and are considered to be non-detect at the value given.

3. SPIKE/ SPIKE DUPLICATE (MS/MSD AND BS/BSD)

Sample RAFB-SL10-G-E1 was analyzed as the MS/MSD.

All %R and RPDs were compliant except:

Analyte	S %R	SD %R	QC Limit %R	RPD	QC Limit RPD
benzene	141	-	76-127	-	11
chlorobenzene	-	-	75-130	-	13
toluene	146	-	76-125	-	13
1,1-dichloroethene	-	-	61-145	-	14
trichloroethene	123	-	71-120	-	14

No flags were assigned based on these results as other QC criteria (surrogates) were within acceptance limits.

All BS(LCS) percent recoveries were within QC limits.

4. SURROGATE

There were three surrogates added to each sample. All surrogate %R were within the QC limits listed below:

Surrogate	%R QC Limit
1,2-dichloroethane-d4	76-114
toluene-d8	88-110
bromofluorobenzene	86-115

5. FIELD DUPLICATES

Sample RAFB-SL13-G-E1 was a coded field duplicate of sample RAFB-SL10-G-E1. The RPD QC limits for field duplicates are <20%. If the sample and/or the duplicate results are less than 5X the RL, the QC limit is ± 2X the RL. All RPDs were within QC limits.

6. PROJECT REPORTING LIMITS

All reporting limits were at or below the Georgia EPD NPDES required detection limits.

7. OVERALL ASSESSMENT OF DATA FOR THE CASE

The data quality objectives for measurement data include considerations for precision, accuracy, completeness, representativeness and comparability. The data package as presented by Savannah Laboratories is 100% complete and all data are valid as qualified.

DATA VALIDATION OF

SEMIVOLATILE ORGANIC COMPOUNDS (BNA) BY EPA 625

This report contains the validation of following samples:

Sample ID	Type	Matrix
RAFB-SL9-C-E1	Composite	Water
RAFB-SL10-C-E1	Composite	Water
RAFB-SL11-C-E1	Composite	Water
RAFB-SL12-C-E1	Composite	Water
RAFB-SL13-C-E1	Composite	Water

1. HOLDING TIMES

All samples were extracted within the required seven days of sample collection and analyzed within forty days of extraction.

2. BLANKS

There was one method blank in association with these samples. The blank was found to be free of all analyte contamination.

Data validation criteria for method blanks are that all associated sample results with concentrations less than 10X the common lab contaminants (phthalates) and less than 5X all other analytes found in the blanks were flagged "U" and are considered to be non-detect at the value given.

3. SPIKE/SPIKE DUPLICATE (MS/MSD AND BS/BSD)

Sample RAFB-SL10-C-E1 was analyzed as the MS/MSD.

All %R and RPDs were within the QC limits listed below:

Analyte	QC Limit %R	QC Limit RPD
2,4-dinitrotoluene	24-96	38
1,2,4-trichlorobenzene	39-98	28
acenaphthene	46-118	31
pyrene	26-127	31
N-nitroso-di-n-propylamine	41-116	38
1,4-dichlorobenzene	36-97	28
pentachlorophenol	9-103	50
phenol	12-110	42
2-chlorophenol	27-123	40
4-chloro-3-methylphenol	23-97	42
4-nitrophenol	10-80	50

4. SURROGATE

There were six base/neutral extractable surrogates added to each sample prior to extraction. All surrogate %R were within the QC limits listed below:

Surrogate	%R QC Limit
nitrobenzene-d5	35-114
terphenyl-d14	33-141
1-fluorobiphenyl	43-116
2-fluorophenol	21-110
2,4,6-tribromophenol	10-123
phenol-d5	10-110

5. FIELD DUPLICATES

Sample RAFB-SL13-C-E1 was a coded duplicate of sample RAFB-SL10-C-E1. The RPD QC limits for field duplicates are <20%. If the sample and/or the duplicate results are less than 5X the RL, the QC limit is ± 2X the RL. All results in both samples were reported as non-detect, therefore, the field precision was acceptable.

6. PROJECT REPORTING LIMITS

All project reporting limits were at or below the Georgia EPD NPDES required detection limits.

7. OVERALL ASSESSMENT OF DATA FOR THE CASE

The data quality objectives for measurement data include considerations for precision, accuracy, completeness, representativeness, and comparability. The data package as presented by Savannah Laboratories is 100% complete and all data are valid as qualified.

DATA VALIDATION OF

POLYNUCLEAR AROMATIC HYDROCARBONS (PAH) BY EPA 610

This report contains the validation of following samples:

Sample ID	Type	Matrix
RAFB-SL9-C-E1	Composite	Water
RAFB-SL10-C-E1	Composite	Water
RAFB-SL11-C-E1	Composite	Water
RAFB-SL12-C-E1	Composite	Water
RAFB-SL13-C-E1	Composite	Water

1. HOLDING TIMES

All samples were extracted within the required seven days of sample collection and analyzed within forty days of extraction.

2. BLANKS

There was one method blank in association with these samples. The blank was found to be free of all analyte contamination.

Data validation criteria for method blanks are that all associated sample results with concentrations less than 10X the common lab contaminants (all phthalates) and less than 5X all other analytes found in the blanks were flagged "U" and are considered to be non-detect at the value given.

3. SPIKE/SPIKE DUPLICATE (MS/MSD AND BS/BSD)

Sample RAFB-SL10-C-E1 was analyzed as the MS/MSD.

All %R and RPDs were within the QC limits as listed below:

Analyte	QC Limit %R	QC Limit RPD
acenaphthene	44-162	52
benzo(a)pyrene	10-199	40
fluorene	10-142	40
naphthalene	50-135	40
pyrene	50-158	43

4. SURROGATE RECOVERY

There was one surrogate added to each sample. All surrogate %R were acceptable (QC limits 28-106%).

5. FIELD DUPLICATES

Sample RAFB-SL13-C-E1 was a coded duplicate of sample RAFB-SL10-C-E1. The RPD QC limits for field duplicates are <20%. If the sample and/or the duplicate results are less than 5X the RL, the QC limit is ± 2X the RL. All results in both samples were reported as non-detect, therefore, the field precision was acceptable.

6. PROJECT REPORTING LIMITS

All project reporting limits were below the Georgia EPD NPDES required detection limits. However, there were three sets of compounds which co-eluted:

a. chrysene and benzo(a)anthracene

b. indeno(1,2,3-cd)pyrene and dibenzo(a,h)anthracene

c. phenanthrene and anthracene

No action was required based on this as all results for these compounds were reported as non-detect.

7. OVERALL ASSESSMENT OF DATA FOR THE CASE

The data quality objectives for measurement data include considerations for precision, accuracy, completeness, representativeness, and comparability. The data package as presented by Savannah Laboratories is 100% complete and all data are valid within listed qualifiers.

DATA VALIDATION OF

PESTICIDES AND POLYCHLORINATED BIPHENYLS BY EPA 608

This report contains the validation of the following samples:

Sample ID	Type	Matrix
RAFB-SL9-C-E1	Composite	Water
RAFB-SL10-C-E1	Composite	Water
RAFB-SL11-C-E1	Composite	Water
RAFB-SL12-C-E1	Composite	Water
RAFB-SL13-C-E1	Composite	Water

1. HOLDING TIMES

The samples were extracted within 7 days of sampling and analyzed within 40 days of extraction.

2. BLANKS

There was one method blank in association with these samples. The blank was found to be free of all analyte contamination.

Data validation criteria for method blanks are that all associated sample results with concentrations less than 5X all other analytes found in the blanks were flagged "U" and are considered to be non-detect at the value given.

3. SURROGATE RECOVERY

One surrogate, dibutylchlorendate (DBC) was spiked into each sample to monitor the extraction and analysis procedures. All surrogate percent recoveries (%R) were within the QC Limits except:

Sample	Surrogate	%R	QC Limit
RAFB-SL9-C-E1	DBC	36	50-150%
RAFB-SL11-C-E1	DBC	48	50-150%
RAFB-SL12-C-E1	DBC	38	50-150%

The analytes in the above samples are considered to be estimated and qualified "UJ".

4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE(MS/MSD)TS

MS/MSD was performed on sample RAFB-SL10-C-E1.

All %R and RPDs were within QC limits listed below except:

Analyte	S %R	SD %R	QC Limit %R	RPD	QC Limit RPD
gamma-BHC	-	-	52-136	-	18
heptachlor	-	-	42-139	-	22
aldrin	-	-	42-116	-	25
dieldrin	-	-	51-143	-	46
endrin	-	-	57-142	26	23
4,4'-DDT	-	-	67-137	-	28

No action was taken based on the non-compliant RPD as both %R values were within the QC limits.

All BS(LCS) %R and RPDs were within QC limits.

5. FIELD DUPLICATES

Sample RAFB-SL13-C-E1 was a coded field duplicate of sample RAFB-SL10-C-E1. The RPD QC limits for field duplicates are <20%. If the sample and/or the duplicate results are less than 5X the RL, the QC limit is ± 2X the RL. All results in both samples were reported as non-detect, therefore, the field precision was acceptable.

6. PROJECT REPORTING LIMITS

All project reporting limits were at or below the Georgia EPD NPDES required detection limits.

7. OVERALL ASSESSMENT OF DATA FOR THE CASE

The data quality objectives for measurement data include considerations for precision, accuracy, completeness, representativeness, and comparability. The data package as presented by Savannah Laboratories is 77.8% complete due to non-compliant surrogate recoveries. All usable data are valid as qualified.

DATA VALIDATION OF

TRACE METALS BY ICP AND GFAA

This report contains the validation of the following samples:

Sample ID	Type	Matrix
RAFB-SL9-C-E1	Composite	Water
RAFB-SL10-C-E1	Composite	Water
RAFB-SL11-C-E1	Composite	Water
RAFB-SL12-C-E1	Composite	Water
RAFB-SL13-C-E1	Composite	Water

1. HOLDING TIMES

All samples were extracted and analyzed within the required time of sampling. The metals limit was six months from sampling.

2. BLANKS

There was one preparation blank analyzed in association with these samples. The blank was found to be free of analyte contamination.

All associated sample results with concentrations less than 5X found in the preparation and calibration blanks are flagged "U" and are considered to be non-detect at the value given.

3. MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

Sample RAFB-SL10-C-E1 was analyzed as the MS/MSD. All %R and RPDs were compliant (QC limits 75-125% and 20% respectively).

All BS/BSD %R and RPD values were within the QC limits.

4. FIELD DUPLICATES

Samples RAFB-SL13-C-E1 was a coded field duplicate of sample RAFB-SL10-C-E1. The RPD QC limits for field duplicates are <20% If the sample and/or the duplicate results are less than 5X the RL, the QC limit is ± 2X the RL. All RPD values were within the QC limits.

5. PROJECT REPORTING LIMITS

All project reporting limits were at or below the Georgia EPD NPDES required detection limits.

6. OVERALL ASSESSMENT OF DATA FOR THE CASE

The data quality objectives for measurement data include considerations for precision, accuracy, completeness, representativeness, and comparability. The data package as presented by Savannah Laboratories is 100% complete and all usable data are valid as qualified.

DATA VALIDATION OF

CONVENTIONAL COMPOUNDS

This report contains the validation of the following samples:

Sample ID	Type	Matrix
RAFB-SL9-G-E1	Grab	Water
RAFB-SL10-G-E1	Grab	Water
RAFB-SL11-G-E1	Grab	Water
RAFB-SL12-G-E1	Grab	Water
RAFB-SL13-G-E1	Grab	Water

The listed samples were analyzed for cyanide (EPA Method 335.3), pH (EPA Method 150.1) and oil & grease (EPA Method 413.2).

I. HOLDING TIMES

All samples were analyzed within the required times of sampling (cyanide 14 days, oil & grease 28 days and pH 24 hours) except pH. All pH samples were analyzed ≈51-76 hours beyond sampling and all results were qualified "J" as estimated.

2. BLANKS

There was one method blank for each analysis in association with these samples. The blanks were found to be free of all analyte contamination.

Data validation criteria for method blanks are that all associated sample results with concentrations less than 5X the level found in the blanks were flagged "U" and are considered to be non-detect at the value given.

3. SPIKE/ SPIKE DUPLICATE (MS/MSD AND BS/BSD)

Sample RAFB-SL10-G-E1 was analyzed as the MS/MSD for cyanide and oil & grease.

All %R and RPDs were compliant (QC limits 75-125% and 20% respectively).

All BS(LCS) percent recoveries were within QC limits for all analyses.

4. SURROGATE

There were no surrogates required for these analyses.

5. FIELD DUPLICATES

Sample RAFB-SL13-G-E1 was a coded field duplicate of sample RAFB-SL10-G-E1. The RPD QC limits for field duplicates are <20%. If the sample and/or the duplicate results are less than 5X the RL, the QC limit is ± 2X the RL. All RPDs were within the QC limits, therefore, the field precision was acceptable.

6. PROJECT REPORTING LIMITS

All reporting limits were acceptable.

7. OVERALL ASSESSMENT OF DATA FOR THE CASE

The data quality objectives for measurement data include considerations for precision, accuracy, completeness, representativeness and comparability. The data package as presented by Savannah Laboratories is 100% complete and all data are valid as qualified.

DATA VALIDATION OF

CONVENTIONAL COMPOUNDS

This report contains the validation of the following samples:

Sample ID	Type	Matrix
RAFB-SL9-C-E1	Composite	Water
RAFB-SL10-C-E1	Composite	Water
RAFB-SL11-C-E1	Composite	Water
RAFB-SL12-C-E1	Composite	Water
RAFB-SL13-C-E1	Composite	Water

The listed samples were analyzed for chemical oxygen demand (EPA 410.2), fluoride (EPA 340.2),, biochemical oxygen demand (EPA 405.1), total suspended solids (EPA 160.2), total dissolved solids (EPA 160.1), fecal coliform (Standard Method 9221-C), total recoverable phenolics (EPA 420.2), total kjeldahl nitrogen (EPA 351.2), ammonia-nitrogen (EPA 350.1), nitrate + nitrite-nitrogen (EPA 353.2), organic nitrogen (EPA 351.2/350.1) and total phosphorus (EPA 365.4).

I. HOLDING TIMES

The holding times for the methods are listed below:

Analyte	Method	Holding Time
COD	EPA 410.2	28 days
fluoride	EPA 340.2	28 days
BOD	EPA 405.1	48 hours
TSS	EPA 160.2	7 days
TDS	EPA 160.1	7 days
fecal coliform	SM9221-C	30 hours
phenolics	EPA 420.2	28 days
kjeldahl nitrogen	EPA 351.2	28 days
ammonia nitrogen	EPA 350.1	28 days
NO_3/NO_2-nitrogen	EPA 353.2	28 days
organic nitrogen	EPA 351.2/350.1	28 days
phosphorus	EPA 365.4	28 days

All samples were analyzed within required holding times except biochemical oxygen demand (analyzed ≃49-76 hours beyond sampling) and fecal coliform (analyzed ≃49-76 hours beyond sampling). All results for both of these analyses were qualified "J" or "UJ" as estimated.

2. BLANKS

There was one method blank in association with these samples. (There were two method blanks for the total recoverable phenolics method.) The blanks were found to be free of all analyte contamination.

Data validation criteria for method blanks are that all associated sample results with concentrations less than 10X the common lab contaminants (phthalates) and less than 5X

all other analytes found in the blanks were flagged "U" and are considered to be non-detect at the value given.

3. SPIKE/SPIKE DUPLICATE (MS/MSD AND BS/BSD)

Sample RAFB-SL10-C-E1 was analyzed as the MS/MSD.

All %R and RPDs were compliant except:

Analyte	S %R	SD %R	QC Limit %R	RPD	QC Limit RPD
phosphorus	65	32	75-125	68	20%
kjeldahl-nitrogen	73	-	75-125	29	20%
ammonia-nitrogen	48	52	75-125	-	20%

All phosphorus, kjeldahl-nitrogen and ammonia-nitrogen results were qualified "J" or "UJ" as estimated.

4. SURROGATE

There were no surrogates required for these analyses.

5. FIELD DUPLICATES

Sample RAFB-SL13-C-E1 was a coded duplicate of sample RAFB-SL10-C-E1. The RPD QC limits for field duplicates are <20%. If the sample and/or the duplicate results are less than 5X the RL, the QC limit is ± 2X the RL. All RPDs were within QC limits except as listed below:

Analyte	Sample	Duplicate	RPD	QC Limit
COD	ND	28	> 2X RL	20
coliform	ND	20	> 2X RL	4
ammonia-nitrogen	0.15	0.0084	56.4%	20%
nitrogen-organic	0.50	0.63	23%	20%

The positive results for these analytes were qualified "J" as estimated.

6. PROJECT REPORTING LIMITS

All project reporting limits were acceptable.

7. OVERALL ASSESSMENT OF DATA FOR THE CASE

The data quality objectives for measurement data include considerations for precision, accuracy, completeness, representativeness, and comparability. The data package as presented by Savannah Laboratories is 100% complete and all data are valid as qualified.

APPENDIX I
TEMPLATE FOR THE LABORATORY DATA TABLES

ROBINS AFB ANALYSIS RESULTS

Sample ID Matrix	GA EPD NPDES D.L.
EPA Method 624 - ug/l	
Benzene	2.0
Bromodichloromethane	10
Bromoform	10
Bromomethane	10
Carbon Tetrachloride	2.0
Chlorobenzene	10
Chloroethane	5.0
2-Chloroethylvinyl Ether	10
Chloroform	2.0
Chloromethane	10
Dibromochloromethane	10
1,2-Dichlorobenzene	10
1,3-Dichlorobenzene	10
1,4-Dichlorobenzene	10
1,1-Dichloroethane	2.0
1,2-Dichloroethane	2.0
1,1-Dichloroethene	2.0
Trans-1,2-Dichloroethene	2.0
Cis-1,2-Dichloroethene	
1,2-Dichloropropane	2.0
Cis-1,3-Dichloropropene	2.0
Trans-1,3-Dichloropropene	2.0
Ethylbenzene	2.0
Methylene Chloride	10
1,1,2,2-Tetrachloroethane	2.0
Tetrachloroethene	2.0
Toluene	2.0
1,1,1-Trichloroethane	2.0
1,1,2-Trichloroethane	2.0
Trichloroethylene	2.0
Trichlorofluoromethane	
Vinyl Chloride	10
Xylenes	
Acrolein	50
Acrylonitrile	50
EPA Method 335.3 - mg/l	
Cyanide	0.025
EPA Method 150.1	
pH	
EPA Method 413.2 - mg/l	
Oil & Grease	

Sample ID Matrix	GA EPD NPDES D.L.
EPA Method 625 - ug/l	
Acenaphthene	10
Acenaphthylene	10
Anthracene	10
Benzo(a)anthracene	10
Benzo(b)fluoranthene	10
Benzo(k)fluoranthene	10
Benzo(a)pyrene	10
Benzo(g,h,i)perylene	10
Benzyl butyl phthalate	10
Bis(2-Chloroethyl)ether	10
Bis(2-Chloroethoxy)ether	
Bis(2-Ethylhexyl)phthalate	10
Bis(2-Chloroisopropyl)ether	10
4-Bromophenyl-phenyl-ether	10
2-Chloronaphthalene	10
4-Chlorophenyl-phenyl-ether	10
Chrysene	10
Dibenz(a,h)anthracene	10
Di-n-butylphthalate	10
1,3-Dichlorobenzene	10
1,2-Dichlorobenzene	10
1,4-Dichlorobenzene	10
3,3'-Dichlorobenzidine	20
Diethylphthalate	10
Dimethylphthalate	10
2,4-Dinitrotoluene	20
2,6-Dinitrotoluene	20
Di-n-octylphthalate	10
Fluoranthene	10
Fluorene	10
Hexachlorobenzene	10
Hexachlorobutadiene	10
Hexachloroethane	2
Indeno(1,2,3-cd)pyrene	10
Isophorone	10
Naphthalene	10
Nitrobenzene	10
N-Nitrosodi-N-Propylamine	10
Phenanthrene	10
Pyrene	10
1,2,4-Trichlorobenzene	10
4-Chloro-3-Methylphenol	10
2-Chlorophenol	10
2,4-Dichlorophenol	10
2,4-Dimethylphenol	10
2,4-Dinitrophenol	50
2-Methyl-4,6-Dinitrophenol	50
2-Nitrophenol	50

Sample ID Matrix	GA EPD NPDES D.L.
EPA Method 625 - ug/l (cont)	
4-Nitrophenol	50
Pentachlorophenol	20
Phenol	10
2,4,6-Trichlorophenol	10
EPA Method 610 - ug/l	
Acenapthene	10
Acenaphthylene	10
Benzo(a)pyrene	10
Benzo(g,h,i)perylene	10
Benzo(b,k)fluoranthene	10
Chrysene + Benzo(a) Anthracene	10
Fluoranthene	10
Fluorene	10
Indeno(1,2,3-cd)pyrene + Dibenz(a,h)anthracene	10
Naphthalene	10
Phenanthrene + Anthracene	10
Pyrene	10
1-Methylnaphthalene	
2-Methylnaphthalene	
EPA Method 608 - ug/l	
Aldrin	0.1
alpha-BHC	0.1
beta-BHC	0.1
gamma-BHC	0.1
delta-BHC	0.1
Chlordane	0.5
4,4'-DDD	0.2
4,4'-DDE	0.2
4,4'-DDT	0.2
Dieldrin	0.5
Endosulfan I	0.5
Endosulfan II	0.5
Endosulfan Sulfate	0.5
Endrin	0.2
Endrin Aldehyde	0.2
Heptachlor	0.1
Heptachlor Epoxide	0.1
Kepone	
Methoxychlor	0.3
Toxaphene	2.0
Aroclor-1016	
Aroclor-1221	
Aroclor-1232	
Aroclor-1242	
Aroclor-1248	
Aroclor-1254	
Aroclor-1260	

Sample ID Matrix	GA EPD NPDES D.L.
EPA Method 410.2 - mg/l	
Chemical Oxygen Demand	
EPA Method 340.2 - mg/l	
Fluoride	
Standard Methods 408A - mg/l	
Residual Chlorine	
EPA Method 405.1 - mg/l	
Biochemical Oxygen Demand	
EPA Method 160.2 - mg/l	
Total Suspended Solids	
EPA Method 160.1 - mg/l	
Total Dissolved Solids	
Standard Methods 9222-D - col/100mls	
Fecal Coliform	
EPA Method 420.2 - mg/l	
Total Phenolics	
EPA Method 200.7 - mg/l	
Cadmium	0.01
Chromium	0.01
Copper	0.02
Nickel	0.02
Silver	0.01
Zinc	0.02
EPA Method 239.2 - mg/l	
Lead	0.025
EPA Method 351.2 - mg/l	
Total Kjeldahl Nitrogen	
EPA Method 350.1 -mg/l	
Ammonia-N	
EPA Method 353.2 - mg/l	
Nitrate + Nitrite-N	
EPA Method 351.2/350.1 - mg/l	
Nitrogen (Organic)	
EPA Method 365.4 - mg/l	
Total Phosphorus	

APPENDIX J
SWPPP INSPECTIONS AND REVISIONS